COMMONWEALTH OF PENNSYLVANIA.

DEPARTMENT OF AGRICULTURE.

BULLETIN No. 51.

TABULATED ANALYSES

OF

COMMERCIAL FERTILIZERS

FROM

SAMPLES SELECTED IN ACCORDANCE WITH ACT OF JUNE 28, 1879,

BY THE

Pennsylvania Department of Agriculture.

FROM JANUARY 1st, 1899, TO AUGUST 1st, 1899.

WM. STANLEY RAY,
STATE PRINTER OF PENNSYLVANIA.
1899.

OATH OF FERTILIZER SAMPLING AGENT.

Commonwealth of Pennsylvania, ss:

Personally appeared before me, ...

of ..... County of ..... and State of Pennsylvania, who being duly sworn according to law, doth depose and say: That he has been duly appointed an agent of the Department of Agriculture of Pennsylvania to collect samples of Commercial Fertilizers for analysis, that he is not in any way interested in the manufacture or sale of any fertilizers, and that he will perform the duties of the office with fidelity in accordance with the requirements of law to the best of his ability, and as set forth in the instructions issued by the Secretary of the Department of Agriculture, governing the sampling of fertilizers in this State.

Sworn and subscribed before me, this
..... day of .....
A. D. .....
.....
.....

(Signed).....

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DEPARTMENT OF AGRICULTURE.
COMMONWEALTH OF PENNSYLVANIA.
VIRTUE LIBERTY AND INDEPENDENCE

AN ACT

To regulate the manufacture and sale of commercial fertilizers.

Section 1. Be it enacted, &c., That every package of commercial fertilizer sold, offered or exposed for sale for manurial purposes within this Commonwealth, shall have plainly stamped thereon the name of the manufacturer, the place of manufacture, the net weight of its contents, and an analysis stating the percentage therein contained of nitrogen, or its equivalent in ammonia, in an available form, of potash soluble in water, of soluble and reverted phosphoric acid, and of insoluble phosphoric acid: Provided, That any commercial fertilizer sold, offered or exposed for sale which shall contain none of the above named constituents shall be exempt from the provisions of this act.

Section 2. Every manuafcturer or importer of commercial fertilizers as specified in section one of this act, shall on or before the first day of January, next ensuing, or before offering them for sale in this Commonwealth, file annually with the Secretary of the State Board of Agriculture, an affidavit showing the amount of said fertilizer sold within the Commonwealth during the last preceding year, and if the said amount shall be one hundred tons or less, he shall pay to the Treasurer of the State the sum of ten dollars for each and every article of such commercial fertilizer sold within the State during the last preceding year, and if the said amount shall exceed one hundred tons and be less than five hundred tons, he or they shall pay the sum of twenty dollars as aforesaid, and if the said amount shall be five hundred tons or more, he or they shall pay the sum of thirty dollars as aforesaid. If such manufacturer or manufacturers, importer or importers, shall not have made any sales within the Commonwealth during the preceding year, he or they shall pay the sum of ten dollars as aforesaid. Every such manufacturer shall at the same time file with the Secretary of the State Board of Agriculture, a copy of the analysis required by section one of this act, and shall then be entitled to receive from the Secretary of the State Board of Agriculture, a certificate showing that the provisions of this act have been complied with: Provided, That the certificates which have been issued for the year ending July thirty-first, one thousand eight hundred and ninety-five, are hereby extended until the thirty-first day of December, one thousand eight hundred and ninety-five. (As amended by act, June 26, 1895.)

Section 3. Any person selling, offering or exposing for sale any commercial fertilizer without the analysis required by section one of this act, or with an analysis stating that it contains a larger percentage of any or more of the above named constituents than is contained therein, or for the sale of which all the provisions of section two have not been complied with, shall be guilty of a misdemeanor, and on conviction, shall forfeit a sum not less than twenty-five and not exceeding one hundred dollars for the first offense, and not less than two hundred dollars for each subsequent offense, one-half of which shall be for the use of the informer, and the remainder for the county in which the conviction is secured: Provided, Said informer be the purchaser and goods be for his own use.

Section 4. It shall be the duty of the Board of Agriculture to analyze such specimens of commercial fertilizers as may be furnished by its agents, said samples to be accompanied with proper proof, under oath or affirmation, that they were fairly drawn; the fee for such analysis shall be determined by the executive committee of the Board, and be based upon a fixed rate for each determination, and shall in no case exceed seventy-five per centum of the usual price paid for such services, and shall be payable from the Treasury of the Commonwealth in the manner as now provided by law.

Section 5. That the money paid into the treasury under the provisions of this act shall constitute a special fund from which the cost of selecting samples, making analyses and other expenses incident to the carrying into effect the provisions of this act shall be paid: Provided, That the total amount thus expended shall in no case exceed the amount paid into the Treasury. (As amended by act, May 21, 1895.)

Section 6. The term "commercial fertilizers," as used in this act, shall be taken to mean any and every substance imported, manufactured, prepared, or sold for fertilizing or manuring purposes, except barnyard manure, marl, lime and wood ashes, and not exempt by the provisions of section one of this act.

Section 7. This act shall go into effect on and after the first day of August, one thousand eight hundred and seventy-nine.

Approved:—June 28, 1879.

PREFACE.

Harrisburg, Pa., August 1, 1899.

The following report, giving the results of analyses of commercial fertilizers in Pennsylvania from January 1st to August 1st, 1899, differs in several respects from those heretofore issued by this Department. There is a tendency on the part of farmers and other purchasers of fertilizers to be governed too much by the relative prices at which these goods are sold, rather than by the amount and value of the ingredients which compose them.

The spread of this error has been, doubtless, unintentionally assisted by the practice of printing the price of the various brands too prominently in the Bulletin, and failing to call attention, at the same place, to the constitution of the fertilizer upon which the price is given. Many persons are led to think that because one fertilizer is stated by the chemist to be worth $25.00 per ton and another $15.00 per ton, that the high priced goods are worth the difference, to them. It may be that the cheaper fertilizer is of more real value, for their land and for their crop, than the other. Much depends upon the character of the soil and the variety of the crop for the beneficial effect which a fertilizer produces, and no one can know in advance of actual trial, whether the most expensive or the least costly will accomplish the best results. If, for instance, a soil needs only phosphoric acid, it is a great waste to purchase nitrogen and potash; or if it needs potash only, it will be foolish to spend money for the other items. The point to bear in mind is, that the value to the user is not in the cost of the article or the number of its ingredients, but in its effect upon his crop, and that this effect may be due, almost wholly, to but a single ingredient, and that ingredient may possibly be the least expensive of the whole.

The effort has been, in the preparation of this Bulletin, to direct attention to the valuable ingredients of each brand by printing the amount found in 100 lbs., in block face type, and by the use of foot note references, which show where the rate by which the value of the several ingredients is computed, is to be found. The composition is given by stating the number of pounds of the ingredient in each one hundred pounds of fertilizer, rather than by the use of the term "per cent.," with a view of making the amount clear to the user, no matter how limited his education may be.

In tabulating the results a change has also been made by which there are set down, not only the results of the analyses as ascertained

by the chemist, but also the guarantees of the manufacturers, in contiguous columns. This makes comparison possible, and where the amount found by the chemist differs from the guarantee of the manufacturer, it is easy for the purchaser to see where the variation is and to what extent. The form also of the potash salt is stated; whether it is present as a sulphate or a muriate, a matter of much importance to the growers of special crops.

A revised table of values has been prepared by Dr. William Frear, the chemist in charge of the fertilizer analysis work. The reasons for the changes, are given in the discussion which precedes and follows the tables. The necessity for revision from time to time is apparent to all, for the varying prices of raw material and labor, and the changing trade conditions, which affect manufacturers, make readjustment necessary in order to do justice to all concerned. The foot notes to the several pages indicate where the appropriate table explaining the computations may be found, and the attention of purchasers is specially called to these tables of prices, which they are urged to use, and to compute for themselves the value of the ingredients of such fertilizers as they are about to purchase. The method is exceedingly simple, and the results will often abundantly repay the little time that such calculation requires.

The oath which sampling agents are required to take, and the list of instructions which they are expected to observe, are given in full, for the information and satisfaction of fertilizer manufacturers and agents doing business in the State. The greatest care is exercised in all the work, from the taking of the sample by the Department to the final publication of the result, and no expense or attention is spared to have all accurately analyzed and faithfully reported.

JOHN HAMILTON,
Secretary of Agriculture.

LETTER OF TRANSMITTAL.

State College, Centre Co., Pa.,
July 15, 1899.

Hon. John Hamilton, Secretary of Agriculture. Harrisburg, Pa.:

Sir: I have the honor to transmit, herewith, a report upon the analyses of official samples of fertilizers made from January 1 to August 1, 1899. To this report I have prefixed a statement of the wholesale prices of fertilizer materials from May 1, 1897, to March 1, 1899, in the principal fertilizer markets; a summary of the recent official analyses, made in this and neighboring states, of the various raw materials used in fertilizer manufacture; and an explanation of the revision of the schedule of fertilizer values used in computing commercial valuations for Pennsylvania, that has been made with your approval for use during the current year; together with an explanation of the new form of tabulation adopted under your direction, to permit the comparison of the analysis and the maker's guarantee for the several brands examined.

Respectfully submitted,

WILLIAM FREAR.

FERTILIZER VALUATIONS.

The object of an official valuation of commercial fertilizers is to enable the consumer to judge approximately whether he has been asked to pay for a given brand more than the fertilizing ingredients it contains and market conditions prevailing at the time would warrant. It is clear, therefore, that no attempt is made in this valuation to indicate whether the fertilizer valued possesses a greater or less crop-producing capacity than another fertilizer; but only whether it is higher priced than another of the same general composition.

For this purpose it must be so computed as to include all the elements entering into the cost of a fertilizer as it is delivered to the consumer. These elements may be conveniently grouped as follows:

1. The wholesale cost of the ingredients.

2. The jobber's gross profit on the sale of the ingredients; this includes office expenses, advertising, losses, etc.; for the purpose of the present computation it may be assumed that the sum of this gross profit and the wholesale cost of the ingredients, is equivalent to the retail price of the single ingredients near the wholesale markets in ton lots of original packages for cash.

3. The expense and profit of mixing: This item applies only to complete fertilizers, rock and potash, and ammoniated rock; not to dissolved or ground bone, or to dissolved rock.

4. The expense and profit of bagging.

5. Agents' commission: This item includes not only the commission proper, but every advance in price due to the sale of the goods through an agent in small quantities on time, rather than directly to the consumer in ton lots for cash.

6. Freight from the wholesale market to the point of delivery.

The valuations for 1894 were based:

1. Upon the wholesale prices from September, 1893, to May, 1894, of the raw materials used in fertilizer manufacture, the quotations of the New York market being adopted for all materials except acidulated phosphate rock and ground bone.

2. Upon an allowance of 20 per cent. of the wholesale prices, above mentioned, to cover jobbers' profits.

By adding the 20 per cent. allowed by jobbers' gross profit to the wholesale price of the several raw materials, the retail price in original packages at the jobbers' warehouse is obtained.

Since the amount of the several valuable fertilizing constituents in the various raw materials is known, it is a simple matter to determine the corresponding retail value per pound of the valuable fertilizing constituents yielded by each raw material. A schedule of these

pound values affords a convenient basis of computation of the value per ton of various fertilizers, whose composition is ascertained by analysis.

The values assigned, for the present, to the other elements in the cost of the fertilizer at the point of delivery are:

3. For mixing, $1.00 per ton.

4. For bagging, $1.00 per ton, in all cases except those in which the article was sold in original package; the cost of the package being, in such cases, included in the wholesale price.

5. For agents' commission, 20 per cent. of the cost of the goods f. o. b. at the jobbers' or mixers' warehouse.

6. For freight, $2.00 per ton; the cost of the freight in lots of twelve tons or over, from the seaboard to Harrisburg, averaging $1.88 per ton.

The following valuation of dissolved South Carolina rock illustrates the method:

Phosphoric acid.	Per cent.	Weight per ton.	
Soluble,	11.50	230 lbs. at 4c.	$9 20
Reverted,	2.50	50 lbs. at 3½c.	1 75
Insoluble,	1.00	20 lbs. at 2c.	40
Retail cash value of ingredients,			11 35
Bagging,			1 00
Cash value of goods ready for shipment,			12 35
Agents' commission, 20 per cent.,			2 47
Freight,			2 00
Commercial value per ton,			16 82

It is not to be expected, of course, that the valuations thus computed will precisely represent the fair price to be charged for a brand in each locality and in every transaction. Market conditions, competition, distance from factory, all introduce minor variations. Nevertheless, to make approximation reasonably close, the average valuation of a given class of goods ought to agree closely with its ascertained average selling price. Whenever such an agreement is no longer obtained by the use of a schedule, it is evident that the schedule of retail values of the constituents, or the added allowances for mixing, etc., requires revision.

It is needful to note here another factor greatly affecting the practical accuracy of these approximations. Their computation would offer little difficulty and their usefulness be far greater, if, by the ordinary methods of analysis, the exact nature of the ingredients used to supply the several fertilizer constituents, were capable of cer-

tain determination. This is, however, possible to-day to only a limited extent. The valuations are, therefore, based on the assumption that the fertilizers are uniformly compounded from high quality ingredients, such as are commonly employed in the manufacture of fertilizers of the several classes. Consumers should carefully avoid the error of accepting such valuations as infallible; they are not designed to be used for close comparison of single brands, but only to indicate whether the price asked for a fertilizer is abnormal, assuming good quality for the ingredients used. From this it is clear that, except as high freights may require, the selling price of a brand should not far exceed the valuation; but that a fertilizer may be made of inferior materials and yet have a high valuation.

The schedule of valuations adopted in May, 1897, was continued for use during 1898. The following statements for the fertilizers (single samples) analyzed and reported since then, show the following figures for the average computed values and the average actual selling prices:

Fertilizers.	Number of samples.	Valuation.	Selling price.	Difference of valuation from selling price.
Spring, 1897.				
Complete,	222	$26 08	$25 14	+$0 94
Alkaline,	30	14 12	16 15	−2 03
Dissolved bone,	1	31 00	26 00	+5 00
Ground bone,	35	28 18	27 60	+0 58
Dissolved rock,	44	13 94	13 08	+0 86
Single ingredients,	4	59 30	47 88	+11 42
Fall, 1897.				
Complete,	247	24 73	23 17	+1 56
Alkaline,	50	15 39	16 72	−1 33
Dissolved bone,	22	26 46	25 52	+0 94
Ground bone,	52	27 79	27 12	+0 67
Dissolved rock,	82	14 40	13 45	+0 95
Single ingredients,				
Spring, 1898.				
Complete,	379	26 69	24 46	+2 23
Alkaline,	54	15 08	15 92	−0 84
Dissolved bone,	10	25 71	23 20	+2 51
Ground bone,	55	27 82	26 25	+1 57
Dissolved rock,	82	14 59	12 80	+1 79
Single ingredients,	5	41 42	32 00	+9 42
Fall, 1898.				
Complete,	195	24 70	22 86	+1 84
Alkaline,	50	14 79	17 02	−2 23
Dissolved bone,	9	24 70	23 17	+1 53
Ground bone,	29	28 03	27 62	+0 41
Dissolved rock,	69	13 98	13 73	+0 25
Single ingredients,	6	42 89	35 67	+7 22

These figures show, for complete fertilizers, a close agreement in the spring of 1897, with a relative depression of selling price increasing through the spring of 1898, but slightly decreasing last fall. Omitting reference to the single sample of dissolved bone, analyzed during the

spring of 1897, the variation of this material has been similar to that in case of the complete fertilizers. As in preceding years, an excessive price has been asked for "rock and potash" or "alkaline" fertilizers. The agreement has been close, except during the Spring of 1898, between the average valuations and average selling prices of ground bone and dissolved rock phosphates. The figures for single ingredients show, on the other hand, a wide discrepancy, the valuations apparently being altogether too high. These goods were, however, usually bought for cash directly from the factory and in considerable quantity. If the item for agents' commission, etc., be deducted, the average valuation for single ingredients during the spring of 1897, is $0.13 below; during the spring of 1898, $0.85 above; and during last fall, $1.59 below the actual average selling price. In general, then, these figures for single ingredients are confirmatory of the general correctness of the schedule of valuations adopted in 1897, as applied to the fertilizers analyzed during 1897 and 1898, the valuations for complete fertilizers and dissolved bone being, however, somewhat too high.

To gain an idea of the applicability of this 1897 schedule to the fertilizers sold in 1899, a review of the wholesale market prices for fertilizer ingredients is necessary.

The following table contains summaries of the prices in New York during the months of September to March in the three seasons, 1896-7, 1897-8 and 1898-9. These figures are obtained from the weekly reports of the Oil, Paint and Drug Reporter.

Wholesale Prices of Fertilizer Ingredients, New York: Oil, Paint and Drug Reporter.

Substance.	Amount priced.	Average price, Sept., 1896, to March, 1897.	Average price, Sept., 1897, to March, 1898.	Prices, Sept.-Feb'ry, 1897-98, in per cent. of prices, 1896-97.	Average price, Sept., 1898, to March, 1899.	Prices, Sept.-Feb'ry, 1898-99, in per cent. of prices, 1896-97.
1. Sulphate of ammonia,	Cwt.,	$2.2196	$2.3265	104.8	$2.6457	119.2
2. Nitrate of soda,	Cwt.,	1.8732	1.6812	89.8	1.5763	84.16
3. Dried blood, H. G.,	Unit (20 lbs.),	1.7499	1.941	110.2	1.7629	100.7
4. Dried blood, L. G.,	Unit (20 lbs.),	1.6409	1.7752	108.2	1.7229	105.0
5. Concentrated tankage,	Unit (20 lbs.),	1.575	1.9047	120.9	1.925	122.2
6. Rough bone,	Ton,	16.50	17.10	103.6	19.021	115.3
7. Ground bone,	Ton,	21.75	21.75	94.4	20.54	94.4
8. Bone meal,	Ton,	20.558	21.70	105.5	21.54	104.7
9. Fish guano (dry),	Ton,	18.10	18.45	101.9	19.067	105.4
10. Fish guano (acid),	Ton,	10.64	11.623	109.2	10.0751	94.7
11. Refuse bone-black,	Ton,	18.25	18.25	100.0	20.50	112.3
12. Phosphate rock (Charleston),	Ton,	3.475	3.50	100.7	3.50	100.7
13. Phosphate rock (Peace River),	Ton,	3.25	2.75	84.6	2.75	84.6
14. Phosphate rock (land, 70 per cent.)	Ton,	4.25	3.125	73.5	3.125	73.5
15. Acid phosphate,	Unit,	.545	.506	92.8	.625	114.7
16. Double manure salts,	Cwt.,	1.0425	1.09	104.6	1.084	104.1
17. Sulphate of potash,	Cwt.,	2.0125	2.0125	100.0	2.0102	99.9
18. Kainit,	Ton,	9.05	9.05	100.0	9.021	81.0
19. Muriate of potash,	Cwt.,	1.8125	1.84	101.5	1.835	101.0
20. Sulphuric acid, 66 degrees B.,		.963	1.475	114.3	1.101	153.0

In ammoniates, such as dried blood or concentrated tankage, the unit is of ammonia, of which 82.35 per cent. is nitrogen; in acid phosphates, the unit is of phosphoric acid (phosphorus pentoxid).

Confining our attention, at present, to the nitrogenous materials and the animal sources of phosphoric acid, we note that nitrate of soda and ground bone prices are less, bone-black the same, and sulphate of ammonia and other animal nitrogenous compounds higher in price from September, 1898, to March, 1898, than during the corresponding period of 1896-7, but that the differences in but two cases exceed 10 per cent.

The following data are taken from the monthly reports of Thomas J. White & Co., fertilizer brokers, of Baltimore, Md., giving wholesale quotations upon "ammoniates":

Substance.	Price, March 1, 1897.	Price, Sept. to March, 1898-99.
Sulphate of ammonia, c. i. f., Baltimore:		
Foreign, per cwt.,	.....	$2 60
Domestic, gas, per cwt.,	$2 15	2 63
Ground blood, f. o. b., Chicago, per unit of ammonia,	.....	1 66
Ground blood, f. o. b., Baltimore, per unit of ammonia,	1 60	.....
Concentrated tankage, f. o. b., Chicago, per unit of ammonia,	1 30	1 37
Crushed tankage, f. o. b., Chicago:		
8 per cent ammonia, 20 per cent. bone phosphate, per ton,	.....	13 60
9½ per cent. ammonia, 15 per cent. bone phosphate, per ton,	13 00	15 50
9 per cent. ammonia, 20 per cent. bone phosphate, per ton,	11 50	14 87
Hoof meal, f. o. b., Chicago, per unit of ammonia,	.....	1 42

These figures exhibit the same tendency toward increased price, amounting to about 20 per cent. in the case of sulphate of ammonia and crushed tankage; it should be noted that the figures for the earlier period include quotations for only one month, instead of six months as in the case of the preceding table.

Relative to the prices of rock phosphates—Florida and South Carolina—the monthly reports of the markets in these localities given in The American Fertilizer are authority for the following statements: High grade, kiln-dried South Carolina rock sold from September, 1896, to March, 1897, at $2.50 to $3.35, f. o. b. Ashley River; during 1898, the quantity mined was large and the prices were still $3.00 to $3.25 per ton for high-grade (60 per cent. bone phosphate) in January and February, 1899. Prices of high grade Florida rock have risen from $5 to $9 per long ton, f. o. b. Fernandina, and land pebble to $5.50-$6.00 delivered in New York. The higher prices named apply only to ex port rock. In Tennessee, prices of high-grade rock have risen from $1.45 in the early part of 1898 to $2.25 in December and, for extra

quality, to $3.50 to $4.00 in March of this year. In other words, there has been a slight stiffening of prices for South Carolina land rock, and a marked advance in price for high-grade export rock. Data compiled from the same source, indicate that of the crude phosphates used for domestic consumption during 1893, 53 per cent. came from South Carolina, chiefly land rock; 16 per cent. from Florida, practically all of pebble phosphate, and 31 per cent. from Tennessee, second and lower grade rock.

The cost of sulphuric acid is, of course, an important element in the cost of acidulated fertilizers. The cost of crude brimstone advanced, according to the reports of the U. S. Bureau of Statistics, from an average of $17.04 per long ton for the imports for the year ending June 30, 1897, to $18.45 as an average for the imports for the year following —or an advance of over 8 per cent. The tendency toward increase of price was modified by the larger use of pyrites as a source of sulphur in American sulphuric acid manufacture; the output of pyrites increased in 1898, according to the Engineering and Mining Journal, 50 per cent. over that of 1897. In general, there was a marked tendency toward advance in the price of sulphuric acid during 1898, the quotations in New York for 66 degrees Beaume acid being 53 per cent. above those for the fall and winter of 1896-7.

The prices of the crude rock and the sulphuric acid are, however, of less direct interest than those of the acid rock phosphate. The New York quotations show an increase of 14 per cent. in the quotations since March, 1897. Charleston quotations, given in the American Fertilizer, show the price during the fall and winter of 1897 to have been $6.50 per ton, bagged, the bags returnable to seller; and during the corresponding period of 1898-9, $5.75 to $6.00 cash, in bulk; that is, under similar conditions of sale, the prices are not far different.

In general, rock phosphate goods show a slight tendency to advance in price, though the advance is not yet very considerable in the grades used in America.

The prices of potash salts are regulated by the German Potash Syndicate; except in the case of kainit, New York quotations show no marked change. The wholesale prices fixed for 1899, after March 31st, are 1 to 3 per cent., on different salts, lower than those quoted for the fall of 1898.

COMPOSITION OF RAW MATERIALS.

In order to form a correct idea of the cost per pound of the fertilizing constituents of these materials, it is needful to determine their composition; or, in other words, the quantities of valuable materials each contains. With the exception of ground bone and dissolved rock phosphates, very few of the single ingredients of fertilizers have

been analyzed in Pennsylvania during the past year; in the following table, the averages include the results of analyses made in Massachusetts, Connecticut, New Jersey and Pennsylvania, except in the case of ground bone and dissolved rock phosphates, where Pennsylvania results alone have been included.

Composition of Non-Acidulated Fertilizer Ingredients (Per cent.)

	Number of samples analyzed.	Nitrogen.	Potash.	Total phosphoric acid.
Sulphate of ammonia,	4	20.93	.....	.....
Nitrate of soda,	29	15.67	.....	.....
Dried blood,	13	11.91	.....	1.61
Ground bone,	29	3.41	.....	22.42
Tankage,	27	6.07	.....	11.99
Gorund fish,	16	8.12	.....	7.33
Cotton-seed meal,	16	7.40	1.90	3.15
Sulphate of potash, high grade,	9	.....	48.88	.....
Muriate of potash,	34	.....	51.21	.....
Kainit,	13	.....	12.61	.....
Double sulphate of potash and magnesia,	2	.....	25.72	.....

Composition of Acidulated Ingredients (Per cent.)

	Number of samples analyzed.	Total phosphoric acid.	Soluble phosphoric acid.	Reverted phosphoric acid.	Insoluble phosphoric acid.
Dissolved bone-black,	7	18.65	15.06	3.32	.27
*Dissolved bone,	9	15.18	5.48	4.59	5.11
Dissolved rock phosphate,	69	16.54	10.18	4.70	1.66

*Also contains 1.84 per cent. of nitrogen.

COST, PER POUND, OF FERTILIZER CONSTITUENTS.

From the foregoing data showing the cost per ton, hundred-weight, or other unit of measure, of the several raw materials, and the quantities of valuable constituents the average materials now on the market contain, the wholesale cost per pound of the valuable constituents can be readily estimated. In the case of ammoniates, the quotations

are "per unit of ammonia" in many cases. The term "unit" is equivalent to "per cent."; in goods sold by the ton of 2,000 lbs., the unit is equal to 20 lbs.; and 20 pounds of ammonia contains 16.47 lbs. of nitrogen.

In the case of refuse bone-black, unacidulated, the mean, 28.25 per cent. of phosphoric acid, is assumed to represent the average material on the market.

Phosphate rock is sold by the ton of 2,240 lbs.; this material is sold on the basis of the bone-phosphate of lime it contains, with drawbacks for injurious constituents. The Charleston rock is understood to contain 60 per cent. of bone phosphate; the land rock, 70 per cent.; in the absence of a reliable average for the Peace River rock quoted, no attempt is made to include it in this estimate. Since bone phosphate of lime contains 45.8 per cent. of phosphoric acid, each per cent. of bone phosphate in a long ton of phosphate rock is equivalent to 22.4 lbs. and contains 10.26 lbs. of phosphoric acid.

In the wholesale trade, it is customary to sell dried blood, azotine, horn and hoof meals, and concentrated tankage solely on the basis of ammonia, to the entire disregard of the phosphoric acid contained.

Likewise, the insoluble phosphoric acid is omitted from consideration, and contracts are based solely upon the "available" phosphoric acid; that is, the sum of the "soluble" and "reverted" or "citrate soluble" phosphoric acid; nor in rock phosphates is any claim made for the small quantities of nitrogen and potash they always contain, nor in dissolved bone for the potash present.

Under these conditions, the wholesale cost per pound in New York of the valuable constituents of such materials as furnish but a single fertilizing element, these materials being assumed to be in the state of preparation and in the package in which the manufacturer purchased them, are given in the following table; also, a figure representing a fair retail price at the factory, the materials having undergone no change in treatment or packing, and the allowance for expense and profit in retailing being 20 per cent.

Wholesale Cost, per Pound, of Fertilizer Constituents (New York).

	I. Ingredients Supplying One Constituent.		
	Constituent valued.	Wholesale prices.	Wholesale price, plus 20 per cent.
		Cents.	Cents.
Sulphate of ammonia,	Nitrogen,	12.64	15.17
Nitrate of soda,	Nitrogen,	10.06	12.07
Dried blood, high grade,	Nitrogen,	10.70	12.84
Dried blood, low grade,	Nitrogen,	10.46	12.55
Concentrated tankage,	Nitrogen,	11.69	14.03
Refuse bone-black (28.25 per cent., P_2O_5),	Phosphoric acid, total,	3.63	4.36
Charleston rock (60 per cent. bone phosphate),	Phosphoric acid, total,	.57	.68
Land rock (70 per cent. bone phosphate),	Phosphoric acid, total,	.44	.53
Acid phosphate (Grade, 15 per cent. available),	Phosphoric acid, available	3.125	3.75
Double manure salts,	Potash,	4.21	5.05
Sulphate of potash, high grade,	Potash,	4.11	4.93
Muriate of potash,	Potash,	3.58	4.30
Kainit,	Potash,	3.58	4.30

The quotations for bone are given without reference to quality, so that it is impossible from these data to fairly apportion their several wholesale values to the nitrogen and the phosphoric acid contained in this material. As compared with tankage, the general tendency is to assign a higher commercial rating to the phosphoric acid in bone and to the nitrogen a rating not very different from that given in tankage. The quotations of Thos. J. White & Co., show the average wholesale rates in Baltimore during September, 1898, to March, 1899, for tankage to have been $1.65 per unit of ammonia and $0.10 per unit of bone phosphate of lime; this quotation for ammonia is equivalent to $2.00 per unit for nitrogen.

The average composition of the ground bone and bone meal samples analyzed in Pennsylvania, last fall, was as follows:

Phosphoric acid, 22.42 per cent; nitrogen, 3.41 per cent.

The prepared bone contains less fat and moisture, and often less nitrogen than the ordinary "rough bone"; but these differences tend, in a manner, to neutralize each other.

Assuming for the rough bone quoted in the New York markets the same composition as the bone meal sold in Pennsylvania, and for the value of the nitrogen, $2.00 per unit, the values per pound of the several constituents would be:

Wholesale Cost, per Pound, of Fertilizer Constituents (New York).

	II. Bone.		
	Constituent valued.	Wholesale prices.	Wholesale price, plus 20 per cent.
		Cents.	Cents.
Rough bone,	Nitrogen,	10.0	12.0
	Phosphoric acid,	2.75	3.30
Ground bone,	Nitrogen,	10.78	12.93
	Phisphoric acid,	2.96	3.55

There are no wholesale data available for the direct estimation of the wholesale pound values of acidulated bone (animal bone); the schedule must, upon this point, depend upon retail selling prices.

VALUATIONS IN NEIGHBORING STATES.

It is desirable, from all points of view, that the schedules of valuation throughout a district in which similar market conditions prevail, should differ as little as possible. It has been our practice in the past, to conform our schedule to that adopted after very careful cooperative study of market conditions for each year, by the New England states and New Jersey, except where the peculiar conditions of our market have made the valuations diverge too largely from the actual selling prices, as in the case of ground bone and dissolved rock prosphates. The New England schedules for 1897, 1898 and 1899 are as follows:

Trade Values Adopted by the New England Stations and New Jersey.

Ingredients.	1897.	1898.	1899.	Values of 1899 in per cent. of values of 1897.
Nitrogen—				
in ammonia salts,	13½	14	15	111.1
In nitrates,	14	13	12½	89.3
in dry and fine ground fish,	.....	14	14	100.0
in meat, blood and mixed fertilizers,	14	.....	.....	.....
in cotton seed meal,	12	.....	.....	.....
in fine bone and tankage,	13½	13½	14	103.7
in medium bone and tankage,	11	10	10	97.1
in coarse bone and tankage,	8			
Phosphoric acid—				
water soluble,	5½	4.5	4.5	81.8
citrate soluble,	5	4	4	80.0
of cotton-seed meal, castor pomace and wood ashes,	4½	4	4	88.9
of dry ground fine fish, bone and tankage,	5	4	4	80.0
of medium bone and tankage,	4	3½	2	52.9
of coarse bone and tankage,	2½			
of mixed fertilizers (insoluble),	2	2	2	100.0
Potash in forms free from chlorid,	5	5	5	100.0
Potash as muriate,	4½	4¼	4¼	94.4

The pound values assigned to the several constituents of ammoniates and potash salts by this schedule, are clearly in accordance with the market conditions. As for ground bone, the condition of pulverization has materially improved in recent years; in Pennsylvania last fall, the average state of fineness was as follows: Fine (less than 1-50 inch), 70 per cent; medium (1-25 to 1-50 inch), 23 per cent., and coarse (over 1-25 inch in diameter), 7 per cent; in only one case was the quantity of coarse bone at all considerable. Assuming this to represent the average condition of ground bone in the Eastern states, and calculating 70 per cent of the bone as of fine grade, 30 per cent. as medium and coarse, the average value for nitrogen in ground bone, according to the New England schedule, is 12.8 cents per pound, and for phosphoric acid, 3.4 cents per pound, figures very closely agreeing with those deduced from market quotations.

Upon a careful consideration of the changes and tendencies of the wholesale prices of fertilizer ingredients and of the discrepancies occurring since the adoption of the 1897 schedule of valuation, it has been decided that the schedule for use during 1899 should be the same as that adopted for the use of New Jersey and New England, except at three points:

1. In the values assigned to water-soluble and citrate-soluble phosphoric acid derived from bone or other animal matter; it is true that at 5½ and 5 cents per pound respectively, for these constituents, complete fertilizers and dissolved bone were severally over-valued during the fall of 1898, by $1.84 and $1.53; if, however, the New England

values for these constituents—4½ and 4 cents, respectively—had been employed, these two classes of fertilizers would have been undervalued by $0.56 and $0.94, severally. In view of the present rising tendencies of bone, crushed tankage and suphuric acid, it has been thought that 5 and 4½ cents, respectively, would prove more accurate; applying these to the valuation of fall goods, 1898, we have for complete goods an excess of $0.56; and for dissolved bone, of $0.26 above the actual average selling price of these goods.

2. For reasons fully discussed in 1897, it is needful to include in the Pennsylvania schedule of valuations, a distinct set of values for phosphoric acid derived from rock as contrasted with that derived from animal materials. Reference to the tables, given on an earlier page, showing the wholesale cost of a pound of phosphoric acid, will make it plain that when it comes from phosphate rock, it costs the fertilizer maker about one-half a cent; when from refuse bone-black, as quoted in New York, 3.6 cents; when from tankage, about 1.1 cents; and from bone, 2.75 cents. There is nothing to indicate that, after acidulation, the available phosphoric acid from bone is at all better for the crop than that from a good rock lime-phosphate. But so long as the consumer is persuaded that bone phosphoric acid is worth more for his crop than an equal weight of rock phosphoric acid, just so long will the manufacturer of fertilizers be able to command a higher price for fertilizers reputed to derive their phosphoric acid from bone, and just so long will he, in turn, be obliged to pay more for it on the wholesale market. Now, in some states, the volume of rock phosphoric acid used is relatively small and the need for its separate valuation not apparent; in other states, it predominates to the almost entire seclusion of bone phosphoric acid, so that no distinct valuation for the latter is required; but in Pennsylvania both occupy important positions upon the market and each requires its own set of values. Despite the slightly upward tendency of the acid phosphate market, it is thought needless to change the valuations of these constituents at this time, because the average valuations have, under the existing schedule, considerably exceeded the actual selling prices.

3. For similar reasons, nitrogen and phosphoric acid in ground bone are valued at lower rates in Pennsylvania than in New England. Some margin of excess of valuation over selling price still being maintained during the fall of 1898, no increase in the pound values for the constituents of this ingredient seems necessary. But it has been deemed wise to follow the New England schedule in reducing the number of grades of bone, classed according to fineness of pulverization, to two, thus securing greater ease of computation of value on the part of consumer, and greater uniformity in the method of valuation between neighboring states. This is justified by the much more perfect pulverization of the ground bone sold in the State during recent years. Accordingly, it has been needful to readjust the

pound values for the second grade of bone with reference to the new classification. Tankage is scheduled with bone, though costing less, because it is little sold at retail.

The schedule for 1899, as a whole, is as follows:

SCHEDULE OF VALUES FOR FERTILIZER INGREDIENTS, 1899.

	Cents per pound.
Nitrogen, in ammonia salts,	15
in nitrates,	12½
in dry and fine ground fish, meat and blood, and in mixed fertilizers,	14
in cotton seed meal and castor pomace,	14
in fine bone and tankage,	10
in coarse bone and tankage,	8½
Phosphoric acid, soluble in water, in bone fertilizers,	5
soluble in water, in rock fertilizers,	3
soluble in ammonium citrate, in bone fertilizers,	4½
soluble in ammonium citrate, in rock fertilizers,	2½
insoluble in ammonium citrate, in bone fertilizers,	2
insoluble in ammonium citrate, in rock fertilizers,	1½
Phosphoric acid in fine bone, tankage and fish,	3½
Phosphoric acid in coarse bone and tankage,	2
Phosphoric acid in cotton-seed meal, castor pomace and wood ashes,	4½
Potash in high grade sulphate and in forms free from muriate (or chlorid),	5
as muriate,	4¼

Potash in excess of that equivalent to the chlorin present, will be valued as sulphate, and the remainder as muriate.

Nitrogen in mixed fertilizers will be valued as derived from the best sources of organic nitrogen, unless clear evidence to the contrary is obtained.

Phosphoric acid in mixed fertilizers is valued at bone phosphoric acid prices, unless clearly found to be derived from rock phosphate.

Bone is sifted into two grades of fineness: Fine, less than 1-50 inch in diameter; coarse, over 1-50 inch in diameter.

The result obtained by the use of these valuations does not cover the items of mixing, bagging, freight and agents' commission. To cover these, allowances are made as follows:

For freight, an allowance of $2.00 per ton on all fertilizers.

For bagging, an allowance of $1.00 per ton on all fertilizers, except when sold in original package.

For mixing, an allowance of $1.00 per ton for complete fertilizers, and rock and potash goods.

For agents' commission, an allowance of 20 per cent. is added to the cash value of the goods ready for shipment.

The mean quotations on freight from New York, Philadelphia and Baltimore to Harrisburg, in January, 1897, was $1.68 per ton, in lots of twelve tons or over; in May, 1899, quotations by the Pennsylvania Railroad are: From New York, $2.40; from Philadelphia, $1.70; and from Baltimore, $1.55; mean rate from the three points, $1.88.

FERTILIZER ANALYSES, JANUARY 1 TO AUGUST 1, 1899.

During the six months ending July 1st, 1899, there were received from the several authorized sampling agents eight hundred and twenty-seven (827) fertilizer samples, of which four hundred and three (403) were subjected to analysis, the remainder being rejected either because they represented brands that have, in recent seasons, been frequently tested; because they were regarded as not certainly representative of the brand which they purported to represent; or because they were duplicates of samples already being analyzed.

The samples analyzed group themselves as follows:

250 complete fertilizers, furnishing phosphoric acid, potash and nitrogen.

8 dissolved bones, furnishing phosphoric acid and nitrogen.

47 rock-and-potash fertilizers, furnishing phosphoric acid and potash.

38 ground bones, furnishing phosphoric acid and nitrogen.

58 acidulated rock phosphates, furnishing phosphoric acid only.

2 miscellaneous fertilizers, which group includes potash salts, nitrate of soda and other substances not readily classified under the foregoing heads.

The determinations to which a complete fertilizer is subjected are as follows: (1) Moisture, useful for the comparison of analyses, for indication of dry condition and fitness for drilling, and also of the conditions under which the fertilizer was kept in the warehouse. (2) Phosphoric acid—total, that portion soluble in water, and that portion not soluble in warm ammonium citrate solution, a solution supposed to represent the action of plant roots upon the fertilizer, and the portion insoluble, which is assumed to have little immediate food value. By difference, it is easy to compute the so-called "reverted" acid, which is the portion insoluble in water but soluble in the citrate. The sum of the soluble and reverted is commonly called the "available" phosphoric acid. (3) Potash soluble in water,—most of that present in green sand marl and crushed minerals, and even some of that present in vegetable materials such as cotton-seed meal, not

being included because insoluble in water even after long boiling. (4) Nitrogen—this element is determined by a method which simply accounts for all present, without distinguishing between the quantities present in the several forms of ammonium salts, nitrates or organic matter. (5) Chlorin; this determination is made to afford a basis for estimating the proportion of the potash that is present as chlorid or muriate, the cheaper source. The computation is made on the assumption that the chlorin present, unless in excess, has been introduced in the form of muriate of potash; but doubtless there are occasional exceptions to this rule. One part of chlorin combines with 1.326 parts of potash to form the pure muriate; knowing the chlorin, it is, therefore, easy to compute the potash equivalent thereto. (7) In the case of ground bone, the state of sub-division is determined by sifting through accurately made sieves; the cost of preparation and especially the promptness of action of bone in the soil depends very largely on the fineness of its particles, the finer being much more quickly useful to the plant.

The law having required the manufacturer to guarantee the amount of certain valuable ingredients present in any brand he may put upon the market, chemical analysis is employed to verify the guarantees stamped upon the fertilizer sacks. It has, therefore, been deemed desirable in this report to enter the guaranty filed by the manufacturer in the office of the Secretary of Agriculture, in such connection with the analytical results that the two may be compared. An unfortunate practice has grown up among manufacturers of so wording the guaranty that it seems to declare the presence in the goods of an amount of a valuable constituent ranging from a certain minimum to a much higher maximum; thus, "Potash, 2 to 4 per cent," is a guaranty not infrequently given. In reality, the sole guaranty is for 2 per cent. The guaranteed amounts given for each brand in the following tables, are copied from the guaranties filed by the maker of the goods with the Secretary of Agriculture, the lowest figure given for any constituent being considered to be the amount guaranteed. For compactness and because no essentially important fact is suppressed thereby, the guaranties for soluble and reverted phosphoric acid have not been given separately, but are combined into a single guaranty for available phosphoric acid; in cases where the maker's guaranty does not specifically mention available phosphoric acid, the sum of the lowest figures given by him for soluble and reverted phosphoric acid is used. The law allows the maker to express his guaranty for nitrogen either in terms of that element or in terms of the ammonia equivalent thereto; since ammonia is composed of three parts of hydrogen and fourteen parts of nitrogen, it is a very simple matter to calculate the amount of one, when the amount of the other is given; the amount of nitrogen multiplied by 1.214 will give the

corresponding amount of ammonia, and the amount of ammonia multiplied by 0.824 will give the corresponding amount of nitrogen. In these tables, the expression is in terms of nitrogen. Many manufacturers after complying with the terms of the law, insert additional items in their guaranties, often with the result of misleading or confusing the buyer; the latter will do well to give heed to those items only that are given as the law requires and that are presented in these tables.

A summary of the analyses made this season may be presented as follows:

	Complete fertilizers.	Dissolved bone.	Rock-and-potash.	Ground bone.	Dissolved rock.
Number of analyses,	250	8	47	58	38
Moisture (per cent.),	7.89	5.71	9.59	8.92	5.92
Phosphoric acid:					
Total (per cent.),	11.21	14.13	13.02	16.44	23.15
Soluble (per cent.),	5.87	4.76	6.15	10.63	.....
Reverted (per cent.),	3.26	5.37	5.34	4.23	.....
Insoluble (per cent.),	2.08	4.00	1.53	1.58	.....
Potash (per cent.),	3.48	.....	2.21	.....	.....
Nitrogen (per cent.),	1.57	1.69	.....	.....	3.34
Mechanical analysis of bone:					
Fine, (per cent.),	.....	.....	.....	.....	72
Coarse (per cent.),	.....	.....	.....	.....	28
Commercial valuation,	24.70	21.81	15.16	14.03	28.11
Average selling price,	23.60	21.75	16.83	13.36	26.67
Commercial valuation of samples whose selling price is ascertained	24.53	21.75	15.05	14.02	28.06

It is of interest, in gaining an idea of the general condition of the trade, at this time, to study the departure of goods from their guaranteed composition. Such departure may be due either to a deficiency in the amount or quality of the materials used, or to imperfect mixture; in goods rich in potash salts, nitrate of soda, or sulphate of ammonia, perfect mixing is difficult, particularly in the case of dry-mixed goods. The extent of deficiency observed this season, including only those cases in which it amounted to two-tenths per cent. or more, was as follows:

	Complete fertilizers.	Dissolved bone.	Rock-and-potash.	Dissolved rock.	Ground bone.
Deficient in four constituents,	2	.....	.....	.....	.....
Deficient in three constituents,	7	.....	.....	.....	.....
Deficient in two constituents,	40	1	2	1	.....
Deficient in one constituent,	90	4	15	12	7
Total samples in which deficiency occurred,	139	5	17	13	7

COMPLETE FERTILIZERS—Furnishing

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
	ALLEGHENY CITY FERTILIZER WORKS, ALLEGHENY, PA.		
194	Potato Manure,	John A. Woods, Finleyville, Pa.,	6.71
	AMERICAN REDUCTION CO., PITTSBURG, PA.		
435	Iron City,	Charleroi,	9.64
192	Vegetable Manure,	Weddell & Sutton, W. Newton,	8.47
	ARMOUR FERTILIZER WORKS, CHICAGO, ILL.		
179	Armour's Ammoniated Bone with Potash,	Smith & Sons, Mt. Pleasant,	6.38
178	Armour's Grain Grower,	Smith & Sons, Mt. Pleasant,	5.88
782	Armour's H. G. Potato Fertilizer,	Ruth & Rickabaugh, Newtown Sq.,	6.44
795	Armour's Wheat, Corn and Oats Special,	Brinton & North, West Chester,	6.31
193	Bone, Blood and Potash,	Scott & Co., Belle Vernon,	6.67
	BALTIMORE GUANO CO., BALTIMORE, MD.		
309	B. & G. Ammoniated Bone Phosphate,	J. H. Duttera, Duttera Station,	9.80
686	Baltimore Special Wheat, Corn and Grass Mixture,	C. E. Grumbling & Co., Johnstown,	10.26
	J. H. BARTENSLAGER, STEWARTSTOWN, PA.		
288	Champion 2 per cent. Bone Phosphate,	J. H. Bartenslager, Stewartstown,	10.58
287	Champion 4 per cent. Bone Phosphate,	J. H. Bartenslager, Stewartstown,	9.29
	BAUGH & SONS' CO., PHILADELPHIA, PA.		
34	Baugh's General Crop Grower,	C. Bream, Fairfield,	8.34
138	Baugh's Special Potato Manure,	Darlington & Hammelman, Rosedale	9.17
581	Corn Fertilizer for Sugar Corn and Truck,	Shafer & Fry, Hanover,	5.80
566	Double Eagle Phosphate,	A. K. Diehl, Seitzland,	9.60
135	The $25 Phosphate,	Darlington & Hammelman, Rosedale	6.40
377	$25 Animal Bone Phosphate,	J. Esch, Dempseytown,	11.17
	BERG CO., PHILADELPHIA, PA.		
517	Berg's Special $25 Bone Manure,	W. D. Sprecher & Co., Lancaster,	7.54
510	Berg's $35 Potato Manure,	John B. Singer, Kinzer's,	6.35
	A. H. BLAKER, FOX CHASE, PA.		
77	Blaker's Special for General Use,	Patterson Ramsey, Kelton,	9.14

For explanation of these tables, see p. 21.

Phosphoric Acid, Potash and Nitrogen.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.			
4.64	3.75	.93	*9.32	10.00	*8.39	9.00	3.08	.....	*3.08	5.00	*3.40	4.94	29.06	29.00	194
4.07	3.57	2.56	10.20	.....	*7.64	9.00	1.83	.....	*1.83	2.00	*2.33	2.47	24.16	25.00	435
3.36	1.96	.83	6.20	.....	*5.32	6.00	7.19	.....	7.19	6.00	2.95	2.47	28.22	26.00	192
2.27	4.59	4.84	11.70	8.00	6.86	6.00	.40	2.60	*3.00	3.70	2.90	2.47	27.67	25.00	179
5.35	5.43	2.62	13.40	10.00	10.78	8.00	.....	2.32	2.32	2.00	1.76	1.65	26.60	23.00	178
7.03	1.63	.87	9.53	.....	8.66	.....	6.40	3.44	9.84	.....	2.03	.....	32.61	30.00	792
5.64	2.11	1.13	*8.88	10.00	*7.75	8.00	1.43	.....	1.43	1.00	*.81	.82	18.16	21.00	795
6.70	3.59	.57	10.86	10.00	10.29	8.00	.67	4.88	*5.55	7.00	5.41	4.12	41.28	40.00	193
6.44	2.46	1.82	10.72	.....	8.90	8.00	2.24	.....	2.24	2.00	1.27	1.24	22.15	23.00	309
4.23	3.91	2.72	10.86	.....	*8.14	9.00	2.42	.....	2.42	2.00	.87	.82	20.31	25.00	686
6.74	3.58	3.03	13.35	.....	10.32	8.00	1.85	.....	*1.85	2.00	*1.08	1.24	23.41	20.00	288
6.44	3.86	3.78	14.08	.....	10.30	8.00	4.23	.....	4.23	2.00	1.24	1.24	26.66	22.00	287
6.88	2.62	1.39	10.89	.....	9.59	7.00	1.42	.....	1.42	1.00	1.06	.82	21.12	18.00	34
4.20	2.52	2.06	8.78	.....	6.72	5.00	5.47	4.99	10.46	10.00	1.74	1.65	30.62	23.00	138
6.88	3.06	1.37	11.31	.....	9.94	8.00	.54	.....	.54	.....	2.18	1.65	24.58	23.00	581
6.51	3.16	1.98	11.65	10.50	9.67	8.00	.89	.....	.89	.50	2.37	2.06	25.39	22.00	566
6.37	3.34	2.31	12.02	.....	9.71	7.00	.88	.....	*.88	1.00	*2.39	2.47	25.40	24.00	135
6.16	3.37	2.09	11.62	.....	9.53	7.00	.87	.....	*.87	1.00	*2.20	2.47	24.67	26.00	377
4.20	3.16	5.13	12.49	.....	7.36	7.00	2.82	.....	2.82	2.00	2.50	1.65	26.58	24.00	517
5.11	3.09	4.64	12.87	.....	8.23	7.00	9.39	.....	9.39	8.00	2.74	2.47	34.96	33.00	510
6.64	2.90	2.16	11.70	9.00	9.54	8.00	2.41	.....	2.41	2.00	1.47	1.24	23.86	24.00	77

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
76	Blaker's Special for Potatoes,	Patterson Ramsey, Kelton,	6.63
147	Poudrette,	G. H. Krider, Cochranville,	8.07
	BOWKER FERTILIZER CO., NEW YORK & BOSTON.		
416	Bowker's Ammoniated Dissolved Bone,	McClure Brothers, Burgettstown,	15.01
518	Bowker's Market Garden Fertilizer,	D. R. Doner, Witmer,	9.63
184	Bowker's Potato and Vegetable Phosphate,	Loucks, Morrow & Co., Scottdale,	15.52
364	Potash or Staple,	W. J. Keas, Cooperstown,	11.81
	BRADLEY FERTILIZER CO., BOSTON, MASS.		
190	Bean and Potato Phosphate,	C. Hough, Smithton,	12.52
18	Bradley's Niagara Phosphate,	W. H. Zearing, Shiremanstown,	12.06
	R. WILLIAM BREAM, GETTYSBURG, PA.		
599	Bream's Grain and Truck Fertilizer,	R. Wm. Bream, Gettysburg,	6.65
	HORACE BRILLINGER, EMIGSVILLE, PA.		
465	Brillinger's Special Wheat, Corn and Grass,	Horace Brillinger, Emigsville,	11.41
464	Standard H. G. Phosphate,	Horace Brillinger, Emigsville,	9.14
	S. B. BRODBECK, BRODBECK, PA.		
571	Reliable,	B. F. Goodwin, New Freedom,	10.48
570	Standard Ammoniated Phosphate,	B. F. Goodwin, New Freedom,	8.24
	CHANDLER, RUSSELL & CHANDLER, NEWARK, N. J.		
771	Russell's Harvest Queen Phosphate,	R.C.Fairlamb & Son, Brand'n Sum't	16.94
	CHEMICAL CO. OF CANTON, BALTIMORE, MD.		
445	Baker's Fish Guano,	D. B. Myers, Gardner's Station,	8.21
456	C. C. C. Special Potato Manure,	Jacob Beshoar, Newberrytown,	6.92
271	Harrow Brand Crop Grower,	J. C. Pyle, Castlefin,	7.57
303	Potato Manure,	M. Schaub, Shaffer Station,	5.88
	CLARK'S COVE FERTILIZER CO., NEW YORK.		
12	Clark's Cove Potato and Hop Grower,	J. M. Davis, Greythorn,	13.45
455	Defiance Complete Manure,	Jno. W. Bushey, Mountain Top,	13.09
	CLEVELAND DRYER CO., CLEVELAND, O.		
477	General Crop Fertilizer,	S. M. Pyle, E. Sandy,	9.82
478	Ohio Seed Maker with Potash,	S. M. Pyle, E. Sandy,	6.56
480	Phospho Bone,	S. M. Pyle, E. Sandy,	9.45

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.			
6.01	2.65	4.53	**13.19**	9.00	**8.66**	8.00	9.87	.....	**9.87**	8.00	**1.38**	1.24	31.40	30.00	76
3.89	2.68	.93	**7.50**	.....	**6.57**	.....	1.41	.....	**1.41**	.....	**1.14**	.....	16.52	16.00	147
5.64	4.10	2.01	**11.75**	.....	**9.74**	8.00	2.24	.....	**2.24**	1.00	***1.20**	1.24	22.89	26.00	416
5.11	2.56	2.19	**9.86**	.....	**7.67**	6.00	11.02	.....	**11.02**	10.00	**2.64**	2.47	34.46	35.00	518
6.67	3.20	1.93	**11.80**	11.00	**9.87**	9.00	2.08	.....	***2.08**	4.00	***1.51**	2.47	23.96	35.00	184
6.21	3.61	2.38	**12.20**	.....	**9.82**	8.00	3.69	.....	**3.69**	3.00	**.98**	.82	24.02	25.00	364
4.91	4.69	1.76	**11.36**	10.00	**9.60**	8.00	2.94	.....	***2.94**	3.25	**1.09**	.82	22.90	28.00	1 0
5.21	2.73	1.54	**9.48**	8.00	**7.94**	7.00	1.27	.....	**1.27**	1.08	**1.06**	.82	19.16	25.00	18
7.74	2.62	2.20	**12.56**	12.00	**10.36**	9.00	3.26	.....	**3.26**	2.50	***1.97**	2.06	27.43	22.00	599
.42	9.18	1.61	**11.21**	.....	**9.60**	9.00	3.01	.....	**3.01**	3.00	**.94**	.82	21.84	17.00	465
3.22	6.69	.93	**10.84**	.....	***9.91**	10.00	5.63	.....	**5.63**	5.00	***1.22**	1.24	25.72	21.00	494
7.41	2.70	.97	**11.08**	.....	**10.11**	9.00	2.01	.....	***2.01**	2.50	**.85**	.82	21.57	18.00	571
7.46	2.87	1.95	**12.28**	.....	**10.33**	10.00	2.38	.....	**2.38**	2.00	**1.84**	1.65	26.07	21.00	570
4.38	6.61	1.35	**12.34**	.....	**10.99**	9.50	2.00	1.32	**3.32**	2.00	**1.27**	1.24	25.26	24.00	771
3.61	4.15	3.89	**11.65**	.....	***7.76**	8.00	2.73	.....	**2.73**	2.00	**1.88**	1.65	24.27	20.00	445
4.39	1.15	1.52	**7.06**	.....	***5.54**	6.00	.93	8.86	**9.79**	9.00	***2.31**	2.47	30.97	30.00	456
3.96	4.46	2.59	**11.01**	.....	**8.42**	8.00	2.01	.....	**2.01**	1.00	**.99**	.82	20.60	20.00	271
2.79	5.10	2.22	**10.11**	.....	***7.89**	8.00	5.14	.....	**5.14**	4.50	**.97**	.82	22.77	22.00	303
5.38	1.99	1.53	**8.90**	.....	**7.37**	6.00	5.21	.....	**5.21**	5.00	**1.35**	1.24	23.60	27.00	12
3.83	3.62	1.52	**8.97**	8.00	**7.45**	6.00	2.33	.....	**2.33**	2.00	**1.06**	.82	19.56	18.00	455
7.63	2.94	2.43	**13.00**	.....	**10.57**	.....	5.74	.....	**5.74**	.....	**1.29**	.....	28.16	29.00	477
7.15	3.51	1.74	**12.40**	.....	**10.66**	10.00	1.20	.71	***1.91**	2.00	***1.31**	1.65	24.03	28.00	478
8.24	3.67	2.39	**14.30**	.....	**11.91**	10.00	1.32	.....	**1.32**	1.00	**.96**	.82	23.92	23.00	480

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
	E. FRANK COE CO., NEW YORK.		
307	New England Special Corn Fertilizer,	G. E. Sprenkle, Nashville,	11.20
	HENRY COPE & CO., LINCOLN UNIVERSITY, PA.		
530	Special Chester County Potato and Corn Phosphate,	S.K.Chambers & Bro., West Grove,	8.57
	JOSIAH COPE & CO., LINCOLN UNIVERSITY, PA.		
116	Ammoniated Bone Phosphate,	Charles Lawrence, Glen Hall,	11.22
101	Potato and Tobacco Phosphate,	C. Criswell, Gum Tree,	7.18
153.	Pure Bone Phosphate,	Josiah Cope & Co., Oxford,	8.73
99	Try Me Bone Phosphate,	C. Criswell, Gum Tree,	7.93
	CROCKER FERTILIZER AND CHEMICAL CO., BUFFALO, N. Y.		
470	Ammoniated Wheat and Corn Phosphate,	T. J. Wand, York,	7.60
471	Crocker's Tobacco Formula,	T. J. Wand, York,	7.15
459	Crocker's Universal Grain Grower,	S. H. Creep, Yocumtown,	5.54
332	H. G. Cereal Guano,	H. B. Mitchell, Emlenton,	5.41
331	New Rival Ammoniated Super Phosphate,	H. B. Mitchell, Emlenton,	6.02
473	Niagara Potato, Tobacco and Hop Fertilizer,	T. J. Wand, York,	7.54
481	Special Potato Manure,	E. E. Borland & Bros., Rockland,	6.25
	DETRICK FERTILIZER AND CHEMICAL CO., BALTIMORE, MD.		
45	Detrick's Corn Fertilizer,	West & West, Waynesboro,	10.99
43	Detrick's Potato Fertilizer,	West & West, Waynesboro,	9.01
41	Detrick's Royal Crop Grower,	West & West, Waynesboro,	8.29
74	Detrick's Special Mixture,	W. H. Taylor, Oxford,	9.83
42	Detrick's Standard Potash Fertilizer,	West & West, Waynesboro,	9.63
	LOUIS F. DETRICK, BALTIMORE, MD.		
758	Silver Gray "AA" Phosphate,	Passmore & Gillespie, Nottingham,	10.25
	H. E. DOOLEY, DELTA, PA.		
278	Pennsylvania Special Mixture,	H. E. Dooley, Delta,	8.65
	JAMES G. DOWNWARD & CO., COATESVILLE, PA.		
61	Ammoniated Bone Phosphate,	Thomas Agnew, Kelton,	10.43

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.			
6.13	2.49	1.75	**10.37**	.....	**8.62**	.....	3.41	.....	**3.41**	.....	**.95**	.....	21.92	20.00	307
3.64	4.54	2.19	**10.37**	.....	**8.18**	8.00	3.99	.....	***3.99**	4.00	***1.07**	1.24	22.34	24.00	530
2.92	8.25	.80	***11.97**	12.00	**11.17**	10.00	3.13	.....	**3.13**	2.00	**.97**	.82	23.59	18.00	116
9.71	3.22	.97	**13.90**	12.00	**12.93**	10.00	9.45	.....	**9.45**	7.00	***.73**	1.24	32.17	26.00	101
5.28	3.36	3.02	***11.66**	12.00	**8.64**	8.00	3.66	.....	**3.66**	3.00	**1.97**	1.65	26.16	26.00	153
6.63	3.98	2.03	**12.64**	12.00	**10.61**	10.00	5.67	.....	**5.67**	3.00	***1.38**	1.65	28.12	23.00	99
8.93	3.27	1.51	**13.71**	11.00	**12.20**	10.00	1.99	.....	**1.99**	1.60	***1.98**	2.06	28.14	26.00	470
7.06	3.00	1.41	**11.50**	9.00	**10.06**	8.00	4.20	.....	**4.20**	4.00	**1.70**	1.24	26.79	25.00	471
4.25	3.82	1.56	**9.63**	8.00	**8.07**	7.00	2.77	.....	**2.77**	2.70	**.93**	.82	20.41	21.00	4.9
4.69	4.07	1.93	**10.69**	9.00	**8.76**	8.00	2.14	.....	**2.14**	2.00	**1.05**	.82	21.08	23.00	332
7.22	4.23	1.98	**13.43**	11.00	**11.45**	10.00	2.11	.....	**2.11**	1.60	**1.38**	1.24	25.45	25.00	331
6.12	2.72	2.77	**11.61**	11.00	***8.84**	10.00	4.54	.....	**4.54**	3.20	**2.37**	2.06	28.56	26.00	473
4.40	2.37	3.96	**10.73**	9.00	***0.77**	8.00	6.06	.....	**6.06**	5.40	**4.15**	3.71	24.28	32.00	481
7.29	3.33	1.46	**12.08**	11.00	**10.62**	10.00	2.13	.....	**2.13**	2.00	***.74**	.82	22.20	.....	45
6.61	3.41	1.94	**11.96**	9.00	**10.02**	8.00	4.34	.....	**4.34**	4.00	***1.98**	2.06	28.09	25.00	43
5.45	3.04	2.94	**11.43**	9.00	**8.49**	8.00	2.20	.....	**2.20**	2.00	**1.90**	1.65	24.28	22.00	41
5.15	5.26	1.86	**12.27**	10.00	**10.41**	8.00	1.26	.....	**1.26**	1.00	**.85**	.82	21.27	19.00	74
5.38	3.65	2.68	**11.71**	9.00	**9.03**	8.00	4.27	.....	**4.27**	4.00	**1.24**	1.24	24.63	23.00	42
8.03	2.71	2.00	**12.74**	10.00	**10.74**	8.00	1.23	.....	**1.23**	1.00	**1.75**	1.65	25.09	22.00	758
5.35	2.87	1.57	**9.79**	.....	**8.22**	7.00	5.10	.....	**5.10**	5.00	**2.10**	1.65	26 96	20.00	278
7.18	2.51	1.70	**11.39**	9.00	**9.69**	8.00	2.92	.....	**2.92**	2.50	**1.32**	1.24	23.89	24.00	61

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
67	Royal Bone Phosphate,	T. M. Taylor, Oxford,	9.78
124	Special Corn Manure,	Harry Way, Chadd's Ford,	9.21
66	Special Potato Fertilizer,	T. M. Taylor, Oxford,	9.78
	AMOS EABY, LEAMAN PLACE, PA.		
546	Pequea Ammoniated Phosphate,	Amos Eaby, Paradise,	11.17
548	Pequea Bone Phosphate,	Amos Eaby, Paradise,	7.18
547	Pequea Economy Super Phosphate,	Amos Eaby, Paradise,	9.17
549	Pequea Phosphate,	Amos Eaby, Paradise,	6.95
550	Pequea Potato Fertilizer,	Amos Eaby, Paradise,	10.61
	ERIE CITY FERTILIZER WORKS, ERIE, PA.		
352	Erie City Standard Phosphate,	J. S. Wallace, Raymilton,	8.76
	EUREKA FERTILIZER CO., PERRYVILLE, MD.		
222	Corn and Potato Special,	Levi Keltrider, Red Lion,	9.22
283	Eureka Wrapper Leaf for Tobacco,	A. W. Trout, Stewartstown,	8.53
284	Farmers' Favorite Bone Phosphate,	A. W. Trout, Stewartstown,	8.54
279	Fish, Rock and Potash,	J. A. Gaily, New Park,	9.13
223	Imperial Bone Phosphate,	Levi Keltrider, Red Lion,	9.65
5	Potato and Vegetable Fertilizer,	Chatham,	10.66
282	Potato and Vegetable Fertilizer,	A. W. Trout, Stewartstown,	8.45
92	Standard Bone Phosphate,	E. A. & J. L. Pennock, Chatham,	9.30
	R. C. FAIRLAMB & SON, BRANDYWINE SUMMIT, PA.		
772	Wheat and Grass Special Phosphate,	R.C.Fairlamb & Son,Brand'n Sum't	6.47
	FARMERS' FERTILIZER CO., WESTMINSTER, MD.		
450	No. 1 Bone Phosphate,	Cook, Benson & Co., Dillsburg,	7.90
	JAS. FULTON & SONS' CO., STEWARTSTOWN, PA.		
292	Fulton's Potato, Wheat, and Corn Fertilizer,	H. M. Gibbs, Stewartstown,	8.18
	JOS. R. GAWTHROP, KENNETT SQUARE, PA.		
777	Complete Ammoniated Bone Phosphate for Corn & Oats,	J. M. Buckley & Bro., Concord,	3.17
	A. S. GEMMILL, STEWARTSTOWN, PA.		
295	Gemmill's Mixture,	A. S. Gemmill, Stewartstown,	9.66
296	Gemmill's Mixture No. 2,	A. S. Gemmill, Stewartstown,	7.94

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.			
7.85	2.90	1.77	**12.52**	9.00	**10.75**	8.00	2.63	.....	**2.63**	2.00	***.64**	.82	22.68	23.00	67
5.75	2.59	1.66	***10.00**	11.00	***8.34**	9.00	4.35	.....	**4.35**	3.00	**2.48**	1.65	27.74	.....	124
6.16	2.51	1.95	**10.62**	9.00	**8.67**	8.00	4.64	.....	**4.64**	4.00	**1.57**	1.24	25.36	28.00	66
8.06	3.25	1.20	**12.51**	11.00	**11.31**	9.00	1.68	.....	**1.68**	1.00	**.86**	.82	22.75	20.00	546
4.73	3.77	2.79	**11.29**	11.00	**8.50**	8.00	5.45	.....	**5.45**	4.50	**2.74**	2.06	30.30	30.00	548
6.28	3.27	2.36	**11.91**	9.00	**9.55**	7.00	2.33	.....	**2.33**	2.00	**1.55**	1.24	24.21	24.00	547
5.47	3.19	2.22	**10.88**	10.00	**8.66**	7.00	2.99	.....	**2.99**	2.50	**2.06**	1.65	25.46	27.00	549
5.30	2.96	1.85	**10.11**	.....	**8.26**	8.00	7.74	.....	**7.74**	7.00	**2.40**	2.06	32.26	30.00	550
3.29	4.73	2.45	**10.47**	9.00	**8.02**	8.00	2.04	.....	**2.04**	2.00	**1.80**	1.65	22.75	24.00	352
6.26	3.93	2.61	**12.80**	.....	**10.19**	9.00	2.04	.....	***2.04**	3.00	**.99**	.82	22.87	21.50	222
4.94	3.02	3.61	**11.57**	.....	**7.96**	.....	6.05	.....	**6.05**	.....	**1.88**	.....	27.86	27.00	283
6.40	3.25	2.77	**12.42**	.....	***9.65**	10.00	2.88	.....	**2.88**	2.00	***1.27**	1.65	24.08	20.00	234
4.70	4.96	2.10	**11.76**	.....	**9.66**	8.00	.76	.....	***.76**	1.00	**.54**	.41	19.02	16.80	279
5.69	3.80	2.36	**11.85**	10.00	**9.49**	9.00	2.17	.....	**2.17**	1.00	**1.09**	.82	22.03	18.00	223
5.60	3.17	3.56	**12.33**	.....	**8.77**	8.00	3.35	.....	***3.35**	4.00	**2.20**	1.65	28.35	20.00	5
6.84	3.55	2.81	**13.20**	.....	**10.39**	8.00	.53	1.82	***2.35**	4.00	***1.40**	1.65	25.23	22.00	282
5.98	3.41	3.37	**12.76**	.....	**9.39**	.....	1.90	.....	**1.90**	.....	**1.41**	.....	23.53	20.00	92
6.67	3.77	2.41	**12.85**	.....	**10.44**	8.00	1.64	.....	***1.64**	2.00	***1.58**	2.47	24.70	24.00	772
6.93	2.39	1.00	***10.32**	11.00	**9.32**	9.00	2.89	.....	**2.89**	2.00	**2.17**	2.06	25.94	21.00	459
7.08	2.48	1.41	**10.97**	.....	**9.56**	9.00	3.94	.....	***3.94**	4.00	**2.20**	2.06	27.67	20.00	292
4.61	3.44	5.09	**13.14**	.....	**8.05**	8.00	.....	.76	***.76**	1.50	**2.37**	1.24	24.90	25.00	777
5.72	2.84	3.83	**12.39**	.....	***8.56**	9.00	4.94	.....	***4.94**	6.50	***1.99**	2.06	27.94	23.00	235
5.49	3.91	3.73	**13.13**	.....	**9.40**	9.00	2.14	.....	***2.14**	3.00	***1.43**	1.65	24.08	20.00	296

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken	Moisture in 100 pounds.
	GREAT EASTERN FERTILIZER CO., RUTLAND, VT.		
408	English Wheat Grower,	Wm. Ditzenberger, Franklin,	6.21
	GRIFFITH & BOYD, BALTIMORE, MD.		
561	Cereal Bone Plant Food,	E. A. Barb, Seven Valleys,	9.24
175	Queen Phosphate,	Kulp & Mechling, Mount Pleasant,	10.14
177	Spring Crop Grower,	Kulp & Mechling, Mount Pleasant,	11.42
176	Valley Fertilizer,	Kulp & Mechling, Mount Pleasant,	10.07
	A. M. GROVE & CO., MUDDY CREEK FORKS, PA.		
252	Special Potato Fertilizer,	Grove & Uffelman, Brogueville,	8.80
	HANOVER BONE FERTILIZER CO., HANOVER, PA.		
220	Hanover Excelsior Combine Phosphate,	B. F. Lebernight, Red Lion,	7.59
285	Klondyke Special Potato and Tobacco,	J. A. Bartenslager, Stewartstown,	8.45
	S. M. HESS & BRO., PHILADELPHIA, PA.		
744	Farmer's Cereal King Phosphate,	J. M. Hadden, Grant,	7.38
457	Potato and Truck Manure,	Jacob Beshoar, Newberrytown,	7.25
	HUBBARD & CO., BALTIMORE, MD.		
576	Columbia Gem Phosphate,	J. E. Morrill, Iron Ridge,	7.02
447	Farmer's IXL Super Phosphate,	Daniel La Rue, York Springs,	8.56
	M. P. HUBBARD & CO., BALTIMORE, MD.		
798	Farmer's Acme Fertilizer,	Kregar & Sons, Kingwood,	6.37
244	Farmer's Old Economy Fertilizer,	Anderson & Grove, Felton,	9.65
	JARECKI CHEMICAL CO., SANDUSKY, OHIO.		
320	Lake Erie Fish Guano,	James Sheffer, Cyrus,	6.22
	KEYSTONE CHEMICAL FERTILIZER CO., PHILA.		
542	Keystone Peerless Potato Manure,	Hershey & Weyman, Gordonville,	9.40
543	Keystone Special Potato Manure,	Hershey & Weyman, Gordonville,	10.17
	JAS. W. KILGORE, BROGUEVILLE, PA.		
235	Dissolved Bone Phosphate,	Ed. Grove, Felton,	8.39
	GEO. F. KRUG, KINGSDALE, PA.		
597	Krug's Ammoniated Bone Phosphate,	Adam Humfert, Littlestown,	8.67
	LACKAWANNA FERT. & CHEM. CO., MOOSIC, PA.		
659	Bone Super Phosphate, Corn, Wheat & Rye Special,	Charles Yeckle, Carrolltown,	9.62

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.			
3.84	4.47	1.91	**10.22**	9.00	**8.31**	8.00	1.78	.....	***1.78**	2.00	**.86**	.82	19.44	23.00	408
6.19	2.50	1.96	**11.05**	.....	**9.09**	8.00	2.56	.....	**2.56**	2.00	**.92**	.82	21.69	.....	561
7.71	2.75	1.56	**12.02**	11.50	**10.46**	10.00	.67	2.53	**3.20**	2.50	***1.23**	1.24	25.28	24.00	175
5.70	2.60	1.72	**10.02**	7.50	**8.30**	6.50	4.21	.....	***4.21**	4.50	***1.49**	1.65	24.19	28.00	177
5.17	3.94	1.91	**11.02**	9.00	**9.11**	8.00	2.44	.....	**2.44**	2.00	**.54**	.41	20.11	18.00	176
6.00	3.26	1.33	**10.59**	.....	***9.26**	10.00	4.73	.....	**4.73**	2.25	***1.11**	2.35	24.31	21.00	252
6.30	3.45	1.49	**11.84**	10.00	**10.35**	9.00	2.60	.....	***2.60**	3.00	**1.81**	1.65	25.83	23.60	220
8.73	2.09	.98	**11.80**	10.00	**10.82**	9.00	4.23	.....	***4.23**	5.00	***1.89**	2.06	28.34	25.00	285
6.57	3.05	1.52	**11.14**	.....	**9.62**	.....	1.36	.....	**1.36**	.....	**.78**	.....	20.41	21.60	714
5.74	2.26	1.07	**9.07**	.....	**8.00**	8.00	7.86	.....	**7.86**	6.00	***1.54**	1.65	27.45	29.00	457
4.35	5.33	1.89	**11.57**	10.00	**9.68**	8.00	1.94	.....	**1.94**	1.50	**.61**	.41	20.26	16.50	576
7.31	3.06	1.49	**11.86**	8.50	**10.37**	7.00	2.50	.....	**2.30**	1.75	***1.41**	1.65	24.24	18.60	447
5.81	2.35	1.26	**9.42**	.....	**8.16**	7.00	2.14	.....	**2.14**	2.00	**1.87**	1.65	22.92	20.00	708
6.23	2.97	.96	**10.16**	.....	***9.20**	10.00	1.96	.....	**1.96**	1.50	**.43**	.41	19.05	17.00	941
5.61	5.68	3.13	**14.42**	11.00	**11.29**	10.00	.73	.....	***.73**	1.00	**1.48**	.82	24.57	25.00	320
7.39	1.06	.77	**9.22**	.....	**8.45**	7.00	8.66	.....	***8.66**	9.00	***2.46**	3.30	32.00	31.00	542
5.81	2.39	2.04	**10.24**	.....	**8.20**	.....	5.39	.....	**5.39**	.....	**1.54**	.....	25.65	23.00	543
6.65	3.18	1.40	**11.23**	11.00	***9.83**	10.00	3.07	.....	**3.07**	3.00	**.91**	.82	22.64	21.00	235
7.50	2.42	1.37	**11.29**	10.00	**9.92**	8.50	3.41	.....	**3.41**	2.00	***1.31**	1.65	24.54	19.50	537
7.97	2.67	2.14	**12.78**	.....	**10.64**	.....	2.29	.....	**2.29**	.....	**1.88**	.....	26.64	26.00	659

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
	LAZARETTO GUANO CO., BALTIMORE, MD.		
247	Lazaretto Bone Comp. Phosphate,	Grove & Uffelman, Brogueville,	7.93
246	Retriever Animal Bone Fertilizer,	Grove & Uffelman, Brogueville,	8.40
	B. F. LEBERNIGHT, RED LION, PA.		
221	Lebernight Standard Ammoniated Bone Phosphate,	B. F. Lebernight, Red Lion,	10.36
	LISTER'S AGR'L CHEM. WORKS, NEWARK, N. J.		
13	Lister's Harvest Queen Phosphate,	M. G. Hale, Shippensburg,	9.52
629	Lister's Potato No. 2,	J. & N. Harvey, Riddle's X Roads,	10.00
55	Lister's Special Crop Produeer,	J. S. Witmer & Co., Mercersburg,	3.49
241	Lister's Standard Pure Bone Phosphate,	G. B. Murphy, Windsor Station,	9.34
54	Special Potato Fertilizer,	J. S. Witmer & Co., Mercersburg,	6.92
	MAPES FORMULA AND PERUVIAN GUANO CO., N. Y.		
511	Mapes Manure for Corn,	A. H. Denlinger, Bird-in-Hand,	9.76
	N. MARKLE, SEITZLAND, PA.		
568	Markle's Ammoniated Bone Phosphate,	N. Markle, Seitzland,	11.56
567	Markle's Potato Grower,	N. Markle, Seitzland,	9.64
	MARYLAND FERTILIZER AND MANUFACTURING CO., BALTIMORE, MD.		
580	Ammoniated Fertilizer O. K.,	Shaffer & Fry, Hanover,	8.27
214	Glove Fertilizer,	William Wire, Yoe,	8.55
	MICHIGAN CARBON WORKS, DETROIT, MICH.		
691	General Crop Fertilizer,	J. M. Harshberger & Son, Johnst'n,	7.44
644	Potato Grower,	George Dindinger, Harmony,	10.02
	MILLER FERTILIZER CO., BALTIMORE, MD.		
158	C. & O. Phosphate,	M. L. Harkens, Oxford,	9.01
449	Harvest Queen Phosphate,	S. H. Bailey & Bro., Dillsburg,	11.05
161	Special Potato Fertilizer,	M. L. Harkens, Oxford,	9.22
159	W. G. Phosphate,	M. L. Harkens, Oxford,	10.02
	MILSOM RENDERING & FERTILIZING CO., E. BUFFALO, N. Y.		
730	B. B. Guano,	R. T. Smith, Saltsburg,	7.51

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.				
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.	Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
6.91	3.05	1.20	11.16	.....	*9.96	10.00	3.87	.....	3.87	2.50	1.34	1.03	25.02	19.00	247
6.65	4.27	3.61	14.53	.....	10.92	9.00	4.05	.....	*4.05	4.50	2.07	1.85	29.77	21.00	243
6.88	2.57	1.76	11.21	.....	9.45	9.25	2.01	.....	2.01	2.00	*1.11	1.24	22.02	20.00	221
6.94	3.25	2.31	12.50	11.50	10.19	9.50	2.13	.....	2.13	2.00	1.40	1.24	24.26	24.00	13
6.97	2.52	2.45	*11.94	12.00	9.49	9.25	4.57	.....	4.57	4.00	*1.73	1.81	27.20	30.00	62
1.65	5.16	1.99	8.80	8.00	*6.81	7.00	1.22	.....	1.22	1.00	*.78	.82	16.82	20.00	55
8.11	2.79	2.52	13.42	12.00	10.90	10.00	1.89	.....	1.89	1.50	*2.33	2.35	28.18	25.50	241
4.48	5.49	2.10	12.07	9.00	9.97	8.00	3.46	.....	3.46	3.00	1.81	1.65	26.25	25.00	54
3.45	4.76	2.83	11.04	8.00	8.21	6.00	6.75	.....	6.75	6.00	*2.18	3.71	29.32	.....	511
4.34	3.75	3.47	11.56	10.00	*8.09	9.00	2.00	.....	2.00	2.00	*1.49	1.65	22.41	17.50	563
3.01	3.38	3.26	9.65	7.00	6.39	6.00	5.57	.....	5.57	4.00	*1.55	1.65	24.10	19.00	567
6.00	4.46	1.49	11.95	9.00	10.46	8.00	1.92	.....	*1.92	2.00	.91	.82	22.10	19.00	583
6.04	2.93	3.45	12.42	10.00	*8.97	9.00	1.88	.....	1.88	1.50	*1.62	1.65	23.77	22.00	214
6.62	2.65	.86	10.13	.....	9.27	8.00	3.90	.....	*3.90	4.00	.91	.82	22.66	25.00	691
8.77	.98	.52	10.27	9.00	9.75	8.50	5.59	.....	5.59	5.00	2.47	1.94	30.16	30.00	644
5.65	2.94	.40	8.99	.....	8.59	7.00	1.82	.....	1.82	1.50	.94	.68	19.59	22.00	158
8.32	3.37	.71	12.40	.....	11.69	10.00	2.17	.....	*2.17	2.25	.87	.84	23.43	24.00	1.9
6.55	1.65	.52	8.72	.....	8.20	7.60	5.40	.....	5.40	5.00	.84	.68	22.67	25.00	161
6.37	1.54	.51	8.42	.....	7.91	7.00	1.94	.....	1.94	1.60	.88	.41	18.96	20.00	159
2.15	2.27	1.69	6.11	.....	4.42	.....	1.19	.....	1.19	.....	1.87	.....	17.67	.....	710

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
356	Corn Fertilizer,	Cates & Hillier, Cooperstown,	9.98
673	Pennsylvania Corn and Grain Grower,	W. R. Hughes, Evansburg,	9.60
358	Potato, Hop and Tobacco Phosphate,	Cates & Hillier, Cooperstown,	10.25
361	Wheat, Oats and Barley Phosphate,	Cates & Hillier, Cooperstown,	8.75
	MONUMENTAL CHEMICAL CO., BALTIMORE, MD.		
234	Arundel Complete Fertilizer,	R. A. Lentz, Red Lion,	8.15
71	Monumental Potato Manure,	Martin Greenleaf, Oxford,	6.72
233	Progressive Ammoniated Phosphate,	R. A. Lentz, Red Lion,	8.44
69	William Penn Crop Grower,	Martin Greenleaf, Oxford,	8.64
	AUG. NELLER & CO., STEWARTSTOWN, PA.		
293	Prolific Phosphate,	Aug. Neller & Co., Stewartstown,	7.28
294	Special Compound,	Aug. Neller & Co., Stewartstown,	10.15
	NIACARA FERTILIZER WORKS, BUFFALO, N. Y.		
327	Niagara Potato, Tobacco and Hop Fertilizer,	J. A. McKee, Clintonville,	3.11
	NICKERSON FERTILIZER CO., EASTON, MD.		
569	Advance Guano,	B. F. Coodwin, New Freedom,	11.27
	N. W. FERTILIZER CO., CHICAGO, ILL.		
387	Acidulated Bone and Potash,	B. Corwin, Pleasantville,	7.79
388	Bone and Potash,	B. Corwin, Pleasantville,	8.02
371	Corn and Wheat Grower,	James L. Peebles, Wallaceville,	6.67
372	Potato Grower,	James L. Peebles, Wallaceville,	6.85
	OAKFIELD FERTILIZER CO., BUFFALO, N. Y.		
324	Creat Value Fertilizer,	Wesley,	13.82
336	Potato and Tobacco Fertilizer,	Wesley,	7.88
	OHIO FARMERS' FERTILIZER CO., COLUMBUS, O.		
627	Fish Guano,	G. W. Mauerhoff, Saxonburg,	3.70
	PACIFIC GUANO CO., NEW YORK.		
694	A No. 1 Phosphate,	J. M. Harshberger & Son, Johnst'n,	11.02
	PACKER'S UNION FERTILIZER CO., NEW YORK.		
312	American Wheat and Rye Grower,	J. A. Stalsmith, Grant Station,	8.66
394	Animal Corn Fertilizer,	J. S. Bumstead, Pleasantville,	6.32

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.				
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.	Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
5.20	2.76	2.30	**10.26**	9.00	***7.96**	8.00	2.10	.....	**2.10**	2.00	***2.43**	2.47	25.10	30.00	356
5.12	2.56	1.21	**8.89**	8.00	**7.68**	7.00	.40	.84	**1.24**	1.00	**.96**	.82	18.54	20.00	673
4.70	2.66	2.20	**9.56**	9.00	***7.36**	8.00	3.41	.....	***3.41**	4.00	**2.27**	2.00	24.99	30.00	358
4.89	3.38	2.25	**10.52**	9.00	**8.27**	8.00	1.72	.....	***1.72**	2.00	**1.27**	1.24	20.92	25.00	361
5.50	2.95	.86	**9.31**	.....	**8.45**	8.00	1.83	.....	***1.83**	2.00	***1.33**	1.65	20.84	20.00	234
3.21	3.15	.99	**7.35**	.....	**6.36**	6.00	3.76	.....	***3.76**	4.00	***.70**	.82	18.31	16.00	71
4.47	2.66	.73	***7.86**	10.00	***7.13**	9.00	4.46	.....	**4.46**	2.00	***1.86**	2.47	23.72	24.00	233
4.52	3.02	.94	**8.48**	.....	***7.54**	8.00	1.50	.....	**1.50**	1.00	***.72**	.82	17.44	16.00	69
8.00	2.62	1.06	**11.68**	10.00	**10.62**	9.00	1.89	.....	***1.89**	2.25	**1.66**	1.65	24.86	22.00	293
7.25	2.43	.89	**10.57**	10.00	**9.68**	8.00	1.56	.....	**1.56**	1.50	**1.23**	.82	21.91	19.00	294
3.96	3.31	2.55	**9.82**	9.00	***7.27**	8.00	3.28	.....	**3.28**	2.70	**2.67**	1.65	26.20	28.00	327
6.71	3.42	2.46	**12.59**	.....	**10.13**	7.00	2.45	.....	**2.45**	1.50	**.69**	.41	22.20	18.00	569
7.64	3.63	1.78	**13.05**	12.00	**11.27**	10.00	.....	1.27	***1.27**	1.50	**.84**	.82	22.50	25.00	387
7.12	3.77	1.76	**12.65**	12.00	**10.89**	10.00	.....	1.22	***1.22**	1.50	**.99**	.82	22.66	23.00	388
7.53	4.03	3.48	**15.04**	.....	**11.56**	.....	.....	1.13	**1.13**	.....	**2.16**	.....	28.10	25.00	371
6.15	3.02	1.83	**11.00**	.....	**9.17**	8.00	.....	2.77	**2.77**	2.00	**2.71**	2.47	28.28	30.00	372
4.20	3.08	.28	**7.56**	7.00	**7.28**	6.00	1.15	.....	**1.15**	1.08	**.85**	.82	16.94	25.00	334
3.20	4.54	.88	**8.62**	7.00	**7.74**	6.00	.53	3.85	**4.38**	4.32	**2.66**	2.47	27.66	32.00	336
7.72	4.67	2.78	**15.17**	.....	**12.39**	.....	.....	1.76	**1.76**	.....	**1.03**	.....	25.64	25.00	627
5.65	3.45	2.00	**11.10**	8.00	**9.10**	7.00	2.37	.....	**2.37**	1.50	**1.35**	1.03	22.81	25.00	694
6.99	2.76	1.63	**11.38**	9.00	**9.75**	8.00	2.28	.....	**2.28**	2.00	**.95**	.82	22.11	17.00	312
5.55	2.40	3.03	**10.98**	9.00	***7.95**	8.00	2.92	.....	**2.92**	2.00	**2.60**	2.47	26.82	28.00	394

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
391	Gardner's Complete Manure,	J. S. Bumstead, Pleasantville,	6.44
753	High Grade Potato Manure,	H. Krumecker, Spangler,	6.24
395	Potato Manure,	J. S. Bumstead, Pleasantville,	5.22
475	Universal Fertilizer,	Powell Stover, Ten Mile Bottom,	5.27
	PATAPSCO GUANO CO, BALTIMORE, MD.		
253	Coon Brand Guano,	J. W. Gimmell, Brogueville,	8.89
432	Corn and Tomato Fertilizer,	A. C. Davis, Somerset,	10.20
216	Grange Mixture,	Jonathan Geesy, Dallastown,	8.83
715	Patapsco Corn and Tomato Fertilizer,	J. McNallis, Hastings,	8.51
434	Patapsco Early Trucker,	A. C. Davis, Somerset,	8.23
219	Sea Gull Guano,	Jonathan Geesy, Dallastown,	8.27
217	Tobacceo and Potato Fertilizer,	Jonathan Geesy, Dallastown,	8.29
	PENNSYLVANIA AMMONIA & FERTILIZER WORKS, HARRISBURG, PA.		
22	Special Potato and Vegetable Fertilizer,	W. H. Zearing, Shiremanstown,	7.60
797	Special Potato and Vegetable Fertilizer,	State Asylum, Harrisburg,	6.71
	PIEDMONT, MT. AIRY GUANO CO., BALTIMORE, MD.		
40	Piedmont Potato Producer,	Jacob F. Good, Midvale,	7.86
	J. D. PERKINS, COATESVILLE, PA.		
166	Perkins' Celebrated Monarch H. G. Pure Bone & Pot. F.,	J. L. Walker & Sons, Fairmount,	7.90
	MORO PHILLIPS CHEM. CO., PHILADELPHIA, PA.		
144	Farmers' Union Fertilizer,	Farmers' Union Club, Worcester,	8.10
535	Special Mixture No. 1,	Jno. B. Singer, Kinzer's,	8.80
	PITTSBURG PROVISION CO., PITTSBURG, PA.		
411	Corn and Potato,	Wm. Sanford & Son, Franklin,	3.92
	R. H. POLLOCK, BALTIMORE, MD.		
46	Pollock Ammoniated Bone Phosphate,	M. S. Stober, Waynesboro,	7.36
10	Pollock's Owl Brand Guano,	W. A. Hermon & Co., Mt. Holly,	7.11
7	Pollock's Special Potato and Tobacco Fertilizer,	W. A Hermon & Co., Mt. Holly,	7.95
556	Pollock's Special Wheat Grower,	J. P. Stoltzfus, Ronks,	12.67
11	Superior Corn and Tomato Fertilizer,	W. A. Hermon & Co., Mt. Holly, Pa	9.98

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.				
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.	Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
6.23	2.77	3.18	**12.18**	10.00	**9.00**	8.00	7.87	.....	***7.87**	10.00	**2.79**	2.47	33.82	36.00	391
5.47	2.11	1.80	**9.38**	9.00	***7.58**	8.00	9.17	.....	**9.17**	6.00	**2.24**	2.06	31.03	.....	753
4.27	2.39	3.28	**9.94**	9.00	***6.66**	8.00	2.93	3.92	**6.85**	6.00	**2.72**	2.06	30.44	31.00	395
5.08	3.83	1.31	**10.22**	9.00	**8.91**	8.00	4.99	.....	***4.99**	5.00	**.90**	.82	24.57	21.00	475
6.28	3.01	1.67	**10.96***	10.00	**9.29**	9.00	3.32	.....	**3.32**	3.00	**.92**	.82	22.39	20.00	253
6.18	3.60	1.83	**11.61**	11.00	**9.78**	9.00	2.10	.....	**2.10**	2.00	***1.21**	1.24	22.77	22.00	452
7.03	2.97	1.93	***11.93**	12.50	**10.00**	10.00	2.29	.....	**2.29**	2.00	**1.72**	1.65	25.65	22.00	216
6.35	3.23	1.89	**11.47**	11.00	**9.58**	9.00	2.32	.....	**2.32**	2.00	**1.28**	1.24	23.11	21.60	715
7.00	1.92	2.08	**11.00**	8.00	**8.92**	7.00	4.20	.....	***4.20**	5.00	***4.11**	4.12	33.92	30.00	434
5.33	3.39	2.20	**10.82**	9.00	**8.62**	8.00	1.03	.....	**1.03**	1.00	**.93**	.82	19.64	19.00	219
6.01	3.27	1.49	**10.77**	10.00	**9.28**	9.00	4.02	.....	**4.02**	4.00	***1.51**	2.06	24.96	24.00	217
6.48	3.54	1.71	**11.73**	10.50	**10.02**	9.00	10.04	.....	**10.04**	9.00	***1.55**	1.65	32.31	32.00	22
6.36	3.58	1.81	**11.75**	10.50	**9.94**	9.00	.....	10.24	**10.24**	9.00	***1.63**	1.65	35.82	.....	797
4.70	1.56	.80	**7.06**	.....	**6.26**	.....	5.78	.....	**5.78**	.....	**2.18**	.....	25.41	30.00	40
8.18	3.10	.69	**11.97**	.....	**11.28**	10.00	6.62	.....	***6.62**	7.00	**.89**	.82	27.02	28.00	166
7.53	2.78	1.04	**11.35**	.....	**10.31**	10.00	1.20	6.54	***7.74**	8.00	***1.55**	1.65	32.38	28.00	144
6.49	2.86	2.26	**11.61**	10.00	**9.35**	9.00	5.56	.....	**5.56**	4.75	**2.42**	1.85	30.09	26.00	535
1.07	5.32	6.35	**12.74**	11.00	***6.39**	9.00	.67	2.48	**3.15**	3.00	**1.69**	.82	23.86	26.00	411
7.00	2.75	1.88	**11.63**	11.00	***9.75**	10.00	2.38	.....	**2.38**	2.00	***1.59**	1.65	24.51	23.00	46
4.15	2.80	.80	**8.75**	.....	**7.95**	.....	2.26	.....	**2.26**	.....	**.72**	.....	18.51	22.00	1
7.80	2.52	1.42	**11.24**	10.00	**9.82**	9.00	3.75	.....	***3.75**	4.00	**2.07**	2.06	27.31	26.50	7
7.90	2.09	1.29	**11.19**	10.00	**9.90**	9.00	2.20	.....	**2.20**	2.00	**.90**	.82	21.93	17.50	556
7.13	2.57	.84	**10.57**	10.00	**9.73**	9.00	2.44	.....	**2.44**	2.00	**.86**	.82	21.50	24.00	11

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
	PUGH & LYONS, OXFORD, PA.		
148	Bone Phosphate,	S. R. Dickey & Co., Oxford,	8.86
151	Potato Phosphate,	S. R. Dickey & Co., Oxford,	8.26
	RAMSBERG FERTILIZER CO., FREDERICK, MD.		
442	Ammoniated Phosphate,	E. Eppelman, Bendersville Station,	8.40
595	Corn and Potato Fertilizer,	Strudy & Garrick, Littlestown,	9.35
	RASIN FERTILIZER CO., BALTIMORE, MD.		
237	Ammoniated Alkaline Phosphate,	G. B. Murphy, Windsor Station,	11.92
227	IXL Fertilizer,	J. C. Myers, Red Lion,	10.69
291	Special Potato Fertilizer,	H. M. Gibbs, Stewartstown,	9.13
	HENRY RECKORD MANF'G CO., BEL AIR, MD.		
280	Reckord's Ammoniated Bone,	J. A. Gaily, New Park,	9.19
281	Reckord's Special Compound,	J. A. Gaily, New Park,	9.56
	JOHN S. REESE & CO., BALTIMORE, MD.		
462	Ammoniated Bone Phosphate Mixture,	Kohr & Eberhart, Bashore Station,	10.63
206	Reese's Potato Manure,	P. Spangler, La Bott,	10.19
	RIVERSIDE ACID WORKS, WARREN, PA.		
369	Harvest Moon,	M. C. Sopher, Cherry Tree,	6.65
368	Old Gold,	M. C. Sopher, Cherry Tree,	10.56
367	Rich Acre,	M. C. Sopher, Cherry Tree,	10.81
	ISAAC ROBINSON, BALTIMORE, MD.		
265	Special Corn and Oats Phosphate,	A. Galbraith, Woodbine,	8.56
266	Special Potato and Tomato Phosphate,	A. Galbraith, Woodbine,	8.44
274	Standard Dissolved Bone Phosphate,	J. C. Pyle, Castlefin,	9.08
	RUSSELL & WHITEHEAD, NEWARK, N. J.		
108	Russell's Harvest Queen Phosphate,	Baldwin & Len's, Embreeville,	5.60
	SCIENTIFIC FERTILIZER CO., PITTSBURG, PA.		
604	Corn and Grain,	Smocks,	4.11
25	Scientific Potato Fertilizer,	J. A. Warren, Mechanicsburg,	3.80
	SCOTT FERTILIZER CO., ELKTON, MD.		
490	Scott's Elk Head Super Phosphate,	W. S. Hastings, Atglen,	9.18
508	Scott's Sure Growth Super Phosphate,	Jno. B. Singer, Kinzer's,	9.17

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
Soluble in water.	Reverted.	Insoluble.	Total.		Available.		Present as muriate.	Present as sulphate.	Total.		Found.	Guaranteed.			
			Found.	Guaranteed.	Found.	Guaranteed.			Found.	Guaranteed.					
2.37	4.00	7.33	**13.70**	11.00	**6.37**	6.60	2.91	.....	**2.91**	2.00	***1.53**	1.65	23.24	26.00	148
2.24	3.70	3.21	**9.15**	.....	**5.94**	.....	5.70	.....	**5.70**	.....	**2.88**	.....	28.20	26.00	151
2.75	6.54	2.59	**11.88**	11.00	***9.29**	10.00	2.66	.....	**2.66**	2.00	**.74**	.62	21.25	20.00	442
5.75	5.14	1.70	**12.59**	.....	**10.89**	.....	2.16	.....	**2.16**	.....	**1.22**	.....	23.91	18.00	595
7.17	2.79	2.13	**12.09**	.....	**9.96**	8.00	1.47	.....	**1.47**	1.00	***1.64**	1.65	24.06	18.00	237
6.33	2.39	1.03	**9.75**	.....	***8.72**	9.00	3.17	.....	**3.17**	3.00	**.89**	.82	21.33	22.00	427
4.92	2.37	.65	**7.94**	.....	**7.29**	8.00	4.23	.....	***4.23**	5.00	***.64**	1.65	19.71	22.25	291
6.66	2.90	1.78	**11.34**	10.00	**9.56**	8.00	2.23	.....	**2.23**	1.50	***.98**	1.24	22.03	20.00	289
6.98	3.28	1.65	**11.91**	.....	**10.26**	10.00	2.25	.....	**2.25**	2.00	**1.81**	1.65	25.45	24.00	281
2.27	9.55	.61	**12.43**	.....	**11.82**	10.00	2.42	.....	***2.42**	3.00	**1.11**	.82	23.91	20.00	462
2.56	7.50	.67	**10.73**	.....	**10.06**	9.00	8.27	.....	**8.27**	7.00	**.91**	.82	27.33	22.00	206
7.08	2.49	.84	***10.41**	14.00	**9.57**	7.00	.....	1.17	**1.17**	1.10	**.90**	.82	20.37	21.00	369
9.66	.83	.27	**10.76**	10.75	**10.49**	10.00	.....	2.19	***2.19**	2.20	**1.92**	1.65	26.05	30.00	363
10.68	.84	.22	**11.74**	8.75	**11.52**	8.00	.....	1.60	**1.60**	1.60	**1.94**	1.65	26.73	25.00	367
5.50	3.19	1.39	**10.08**	.....	**8.69**	6.50	2.29	.....	**2.29**	2.00	**1.66**	1.44	23.02	22.00	265
6.39	2.57	1.22	**10.18**	10.00	**8.96**	7.50	2.68	.....	**2.68**	2.25	**1.83**	1.65	24.44	22.00	263
8.09	3.58	1.35	**13.02**	.....	**11.67**	10.00	2.30	.....	**2.30**	2.00	**1.04**	.82	24.49	20.00	274
4.55	4.12	2.38	**11.05**	.....	***8.67**	9.50	.40	1.66	**2.06**	2.00	**1.50**	1.24	22.87	25.00	108
3.50	3.29	2.53	**9.32**	9.00	***6.79**	7.75	2.41	.....	**2.41**	2.00	***1.58**	1.65	21.19	17.50	604
3.79	3.00	3.23	**10.02**	9.00	***6.79**	7.50	.80	7.13	**7.93**	6.00	***2.50**	2.88	31.56	.....	25
6.42	2.90	2.96	**12.28**	.....	**9.32**	9.09	1.49	.....	**1.49**	1.00	**1.05**	.82	21.75	20.00	490
7.36	3.34	2.69	**13.39**	.....	**10.70**	10.00	2.71	.....	**2.71**	2.00	**1.80**	1.65	26.95	25.00	508

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
	SHARPLESS & CARPENTER, PHILADELPHIA, PA.		
88	Dissolved Bone Phosphate,	W. W. Polk, Kelton,	10.00
487	Gild Edge Potato and Tobacco Manure,	W. S. Hastings, Atglen,	11.48
119	Potato, Corn and Truck Guano,	Bailey & Larkin, Northbrook,	7.88
118	No. 2 for Grain and Grass,	Bailey & Larkin, Northbrook,	7.06
15	Royal Spring Mixture,	Henry C. Babble, Carlisle Springs,	10.43
551	Royal Spring Mixture for all Crops,	J. P. Stoltzfus, Ronks,	10.10
14	Special Potato Manure,	Henry C. Babble, Carlisle Springs,	7.52
	SHELDON & CO., BUFFALO, N. Y.		
319	Sheldon's Empire,	Kennerdel,	9.07
195	Sheldon's Farmer's Favorite,	Kennedy & McNary, Cannonsburg,	12.59
196	Sheldon's Guano,	Kennedy & McNary, Cannonsburg,	14.57
426	Sheldon's Potato Special,	J. M. Roab, Midway,	13.52
617	Sheldon's Superior,	R. P. Jack, North Hope,	9.33
198	Sheldon's Trucker's Manure,	Kennedy & McNary, Cannonsburg,	13.26
	M. L. SHOEMAKER & CO., PHILADELPHIA, PA.		
780	Good Enough Super Phosphate,	Jno. C. Roads, Chester Heights,	8.82
183	$23 Phosphate,	W. F. Pool, Ruffsdale,	6.87
537	Swift Sure Phosphate for General Use,	C. S. Hershey, Leaman Place,	9.13
	H. H. SMYSER, BALTIMORE, MD.		
468	Chicago Bone and Tankage,	H. H. Smyser, York,	9.06
	SOUTHERN FERTILIZER CO., YORK, PA.		
202	Ammoniated Dissolved Bone,	D. E. Brown, E. Berlin,	8.82
261	General Crop Grower,	J. Hyson, Bridgeton,	9.21
264	Queen of the Harvest,	Wm. Dodson, York,	9.03
263	Special Potato Grower,	Wm. Dodson, York,	9.02
	STANDARD FERTILIZER CO., BOSTON, MASS.		
57	Standard Potato Grower,	Rice & Heintzleman, Chambersburg,	14.07
	SUSQUEHANNA FERTILIZER CO., BALTIMORE MD.		
80	Ammoniated Bone Phosphate,	T. Brown, Kelton,	8.29
356	Pure Bone Phosphate,	G. B. Passmore & Sons, Oxford,	7.01

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dept rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.			
8.10	1.10	1.19	**10.39**	.....	**9.20**	8.00	4.27	.79	**5.06**	5.00	***2.16**	2.47	28.40	25.25	88
9.38	1.18	1.10	**11.66**	.....	**10.56**	8.50	8.93	.....	***8.93**	10.00	***1.37**	1.85	31.12	27.00	487
5.78	1.69	1.66	**9.13**	.....	**7.47**	6.00	4.80	1.06	***5.86**	6.00	***1.18**	1.24	24.18	25.00	110
6.70	4.60	1.52	**12.82**	.....	**11.30**	10.00	.40	1.06	**1.46**	1.00	**.72**	.41	22.15	18.00	115
7.17	1.69	1.80	**10.66**	.....	**8.86**	8.00	3.16	.....	**3.16**	3.00	**1.11**	.82	22.59	.....	15
6.80	2.05	1.95	**10.80**	.....	**8.85**	8.00	2.81	.....	***2.81**	3.00	**1.02**	.82	21.93	25.00	551
8.11	1.69	.52	**10.32**	.....	**9.80**	.....	.80	7.08	**7.88**	.....	**2.09**	.....	32.59	.....	14
4.27	2.07	.90	***7.24**	8.00	***6.34**	7.00	1.07	.42	**1.49**	1.00	***.81**	.95	16.45	21.00	310
5.23	2.48	1.23	***8.94**	9.00	***7.71**	8.00	2.26	.....	**2.26**	2.00	**1.25**	1.15	20.47	23.00	1 5
3.13	2.21	1.41	***6.75**	8.00	***5.34**	7.00	1.21	.....	**1.21**	1.00	**1.71**	1.65	18.16	22.00	196
4.63	3.03	1.63	**9.29**	9.00	***7.66**	8.00	3.86	.....	***3.86**	4.00	***1.25**	1.36	22.17	24.00	426
5.33	2.84	1.31	***9.48**	10.00	***8.17**	9.00	1.84	.....	***1.84**	2.00	***1.90**	2.06	22.80	30.00	617
4.94	2.34	2.22	**9.50**	9.00	***7.28**	8.00	7.28	.....	**7.28**	7.00	***2.86**	3.30	30.57	33.00	198
6.72	3.04	3.61	**13.37**	12.00	**9.76**	8.00	2.82	.....	**2.82**	2.00	**1.78**	1.65	26.37	28.00	780
3.22	3.69	7.38	**14.29**	.....	**6.91**	.....	2.15	.....	**2.15**	.....	**1.55**	.....	23.19	22.00	182
8.15	3.31	3.20	**14.66**	14.00	**11.46**	9.00	5.10	.....	**5.10**	4.00	**2.55**	2.47	33.06	32.00	537
6.42	3.99	2.37	**11.88**	10.00	**9.51**	8.00	1.63	.....	**1.63**	1.00	**1.07**	1.03	21.82	20.50	468
8.22	2.34	1.83	**12.39**	.....	**10.56**	10.00	2.79	.....	**2.79**	2.50	**1.82**	1.65	26.58	25.00	202
6.91	2.38	1.02	**10.31**	.....	**9.29**	8.00	2.52	.....	**2.52**	2.00	**.79**	.41	21.00	17.00	261
6.58	3.24	1.83	**11.65**	.....	***9.82**	10.00	2.15	.....	**2.15**	2.00	**1.34**	.82	23.43	21.00	264
6.77	2.50	2.29	**11.56**	.....	**9.27**	8.00	3.94	.....	***3.94**	4.00	**1.38**	1.24	25.04	24.00	263
4.80	2.41	1.44	**8.65**	.....	**7.21**	.....	5.43	.....	**5.43**	.....	**1.27**	.....	23.20	25.00	57
3.16	4.49	4.67	**12.32**	11.00	***7.65**	9.00	2.65	.....	**2.65**	2.00	**1.79**	1.65	24.02	22.00	80
5.59	4.29	5.96	**15.84**	11.00	**9.88**	9.00	2.28	.....	**2.28**	2.00	**2.40**	1.65	29.04	26.00	156

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand	From Whom Sample was Taken.	Moisture in 100 pounds.
591	Susquehanna Crop Grower,	John Unger, Littlestown,	6.08
133	Susquehanna Potato Phosphate,	Richards & Owens, Fairville,	10.81
131	XXV Phosphate,	Richards & Owens, Fairville,	8.61
	SWIFT & CO., CHICAGO., ILL.		
655	Pure Super Phosphate,	Fred. Zehner, Zelionople,	3.75
	I. P. THOMAS & SONS CO., PHILADELPHIA, PA.		
52	Potato Manure,	T. J. Comerer, McConnellsburg,	11.49
	TYGERT-ALLEN FERTILIZER CO., PHILA., PA.		
528	Allen's Popular Phosphate,	Downingtown,	6.03
785	Allen's Special Brand Potato Manure,	W. J. Winterbottom, Lenni,	8.24
	UNION STOCK YARDS, CHICAGO, ILL.		
65	Thompson & Edwards' Potato and Corn Super Phos.,	D. W. Chandler, Oxford,	8.63
	J. C. WALKER & SON, GAP, PA.		
502	Pride of Pequa Phosphate,	J. C. Walker & Son, Gap,	8.06
	WALKER, STRATMAN & CO., PITTSBURG, PA.		
182	Four-fold Fertilizer,	Ruffsdale,	5.40
6	Potato Special Fertilizer, Welcome Brand,	J. A. Bosler, Mt. Holly,	4.38
	M. E. WHEELER & CO., RUTLAND, VT.		
341	Corn Fertilizer,	S. K. Weston, Wesley,	9.45
592	H. G. Royal Wheat Grower,	O. A. Haines, Littlestown,	9.58
314	Potato Manure,	R. M. McDowell, Big Bend,	6.21
676	Superior Truck Fertilizer,	W. S. Cobaugh, Vinco,	9.15
	WILLIAMS & CLARK, NEW YORK.		
638	Potato, Hop and Tobacco,	Boggs & Kline, Evans City,	6.21
	WINDLE, DOAN & CO., COATESVILLE, PA.		
521	Ammoniated Bone Phosphate,	Thomas Spackman, Thorndale,	6.58
	ROBT. A. WOOLRIDGE CO., BALTIMORE, MD.		
82	Little Giant Phosphate,	Franklin G. Evans, Kelton,	10.77
501	Old Sledge Phosphate,	Jos. Worrall, Parkersburg,	6.73
85	Triumph Pure Bone Phosphate,	Franklin G. Evans, Kelton,	9.07

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.			
2.90	5.76	4.93	**13.59**	.....	**8.66**	.....	1.38	.....	**1.38**	.....	**.92**	.....	20.92	17.00	591
6.89	2.60	2.77	**12.26**	10.00	**9.49**	8.00	5.49	.....	**5.49**	5.00	***1.41**	1.65	27.13	25.00	133
5.51	4.18	1.99	**11.68**	10.00	**9.69**	8.00	1.45	.....	**1.45**	1.00	***1.01**	1.24	21.33	20.00	131
6.72	3.88	5.57	**16.17**	.....	**10.60**	8.00	.67	1.56	**2.23**	1.00	**2.75**	2.47	31.14	24.90	655
8.87	2.30	.76	**11.93**	10.50	**11.17**	9.00	6.21	.....	**6.21**	6.00	**2.32**	1.65	31.98	.....	52
3.58	3.07	1.38	**8.03**	8.00	**6.65**	6.00	2.02	.....	**2.02**	2.00	**.89**	.82	17.76	22.00	523
3.76	2.26	1.38	***7.40**	8.00	**6.02**	6.00	6.44	.....	**6.44**	6.00	***1.91**	2.06	24.97	25.00	785
.21	4.05	7.84	**12.10**	.....	**4.26**	.....	1.33	1.58	**2.91**	.....	**1.21**	.....	20.07	22.50	65
7.78	3.49	2.34	**13.61**	11.00	**11.27**	10.00	3.55	.....	**3.55**	3.00	**2.53**	2.47	30.80	24.00	592
3.60	3.16	2.55	**9.31**	9.00	***6.76**	7.75	2.35	.....	**2.35**	2.00	**1.69**	1.65	21.46	17.80	182
3.88	2.82	3.36	**10.06**	9.00	***6.70**	7.50	.80	6.28	**7.08**	6.00	***2.40**	2.88	30.15	23.00	6
6.75	2.21	1.52	**10.48**	9.00	**8.96**	8.00	2.22	.....	**2.22**	2.00	**1.73**	1.65	23.74	28.00	341
7.23	2.55	1.15	**10.93**	9.00	**9.78**	8.00	2.02	.....	**2.02**	2.00	**.83**	.82	21.31	18.00	592
8.03	2.88	2.02	**12.93**	9.00	**10.91**	8.00	1.96	.....	***1.96**	3.25	***1.33**	2.06	24.68	25.00	314
6.01	1.65	.93	**8.59**	8.00	**7.66**	7.00	7.55	.....	***7.55**	8.00	***2.56**	3.30	30.12	35.00	676
6.62	3.27	2.81	**12.70**	.....	**9.89**	.....	3.81	.....	**3.81**	.....	**2.48**	.....	29.52	30.00	68
5.41	6.28	5.00	**16.69**	15.00	**11.69**	10.00	.95	.....	***.95**	1.50	**1.71**	1.65	26.77	.....	523
5.87	3.88	1.78	**11.53**	.....	**9.75**	9.00	2.08	.....	**2.08**	2.00	**.89**	.82	21.67	21.00	82
6.01	2.83	2.25	**11.09**	.....	**8.84**	.....	1.14	.....	**1.14**	.....	**.89**	.....	19.96	18.00	591
7.92	1.92	1.29	**11.13**	.....	**9.84**	8.00	3.88	.....	***3.88**	4.00	**1.29**	1.24	24.97	24.00	85

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
	YORK CHEMICAL WORKS, YORK, PA.		
452	Dempwolf's New York Phosphate,	Cook, Bentz & Co., Dillsburg,	8.48
	E. H. ZEIGLER & CO., STEWARTSTOWN, PA.		
300	Bone Phosphate,	E. H. Zeigler, Stewartstown,	8.42
299	Potato Phosphate,	E. H. Zeigler, Stewartstown,	7.24
297	Zeigler's Crop Grower,	E. H. Zeigler, Stewartstown,	9.26
298	Zeigler Mixture,	E. H. Zeigler, Stewartstown,	9.07
	ZELL GUANO CO., BALTIMORE, MD.		
310	Zell's Ammoniated Bone Super Phosphate,	Wm. Thompson, Petroleum Centre,	12.70
37	Zell's Economizer,	W. C. Rodgers, Fairfield,	7.16
444	Zell's Hustler Phosphate,	D. B. Myers, Gardner's Station,	7.27
414	Zell's Special Compound,	W. M. Rice, Franklin,	8.32
443	Zell's Special Compound for Potato and Cabbage,	D. B. Myers, Gardner's Station,	8.31

For explanation of these tables, see p. 21.

LIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
			Total.		Available.				Total.						
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Found.	Guaranteed.			
2.05	7.44	1.45	**10.94**	9.00	**9.49**	8.00	1.97	.....	***1.97**	2.00	**1.00**	.82	20.96	15.00	452
6.93	2.33	2.29	**11.55**	10.00	**9.26**	9.00	4.74	.....	**4.74**	3.50	***1.85**	2.06	27.39	23.00	300
5.75	2.51	2.77	**11.03**	9.00	**8.26**	8.00	10.81	.....	**10.81**	9.00	***2.14**	2.27	33.58	25.00	299
8.02	2.45	1.21	**11.68**	10.00	**10.47**	9.00	3.64	.....	***3.64**	4.00	**1.11**	1.03	24.70	17.00	297
7.11	2.38	1.55	**11.04**	10.00	**9.49**	9.00	4.63	.....	**4.63**	3.50	***1.39**	1.44	25.71	20.00	298
7.45	2.29	1.24	**10.98**	.....	**9.74**	8.00	2.32	.....	**2.32**	2.00	***1.37**	1.65	23.31	24.00	390
8.54	2.34	2.04	**12.92**	.....	**10.88**	9.00	1.55	.....	**1.55**	1.00	**1.00**	.82	23.11	23.00	37
8.03	1.83	3.02	**12.88**	.....	**9.86**	9.00	3.84	.....	**3.84**	3.00	**1.15**	.82	25.20	19.00	444
7.68	2.28	1.40	**11.36**	.....	**9.96**	8.00	4.09	.....	**4.09**	4.00	**2.67**	2.47	29.84	.....	414
7.68	2.50	1.76	**11.94**	.....	**10.18**	8.00	4.36	.....	**4.36**	4.00	***2.20**	2.47	29.01	25.00	443

*Constituent falls below guarantee.

ROCK AND POTASH

Furnishing Phosphoric

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
	BOWKER FERTILIZER CO., BOSTON AND NEW YORK.		
418	Bowker's Harvest Bone with Potash,	McClure Bros., Burgettstown, Pa.,	12.50
185	Bowker's Wheat Grower,	Loucks, Morrow & Co., Scottdale,	14.18
328	Empire State Bone and Potash,	James Bennet, Emlenton, Pa.,	8.28
417	Bowker's Super Phosphate,	McClure Bros., Burgettstown, Pa.	10.67
	BRADLEY FERTILIZER CO., BOSTON, MASS.		
421	Bradley's Alkaline Bone with Potash,	McClure Bros., Burgettstown, Pa.	11.67
	BRUMFIELD & FOSTER, COLORA, MD.		
565	Acid Phosphate and Potash,	Noah Lentz, Seven Valleys, Pa.,	8.69
	CHEMICAL COMPANY OF CANTON, BALTIMORE, MD.		
494	Soluble Bone and Potash,	W. S. Hastings, Atglen, Pa.,	10.40
	CLEVELAND DRYER CO., CLEVELAND, O.		
479	Horsehead with Potash,	S. M. Pyle, East Sandy, Pa.,	6.32
	HENRY COPE & CO., LINCOLN UNIVERSITY, PA.		
165	Soluble Bone and Potash,	Kingsbridge,	8.22
	JOSIAH COPE & CO., LINCOLN UNIVERSITY, PA.		
102	Soluble Bone and Potash,	C. Criswell, Gum Tree,	9.83
	LOUIS F. DETRICK, BALTIMORE, MD.		
75	Bone and Potash, 16 to 4 Mixture,	W. H. Taylor, Oxford,	12.97
	JAS. G. DOWNWARD & CO., COATESVILLE, PA.		
62	Soluble Bone and Potash,	Thomas Agnew, Kelton,	13.26
	EUREKA FERTILIZER CO., PERRYVILLE, MD.		
94	Alkaline Bone and Potash,	E. A. & J. L. Pennock, Chatham,	9.03
	W. S. FARMER & CO., BALTIMORE, MD.		
587	B. & P. Fertilizer,	E. H. Lippey & Son, Littlestown,	10.44
	GREAT EASTERN FERTILIZER CO., RUTLAND, VT.		
317	Soluble Bone and Potash,	J. B. Atwell, Big Bend,	8.35
	HANOVER BONE FERTILIZER CO., HANOVER, PA.		
210	Dissolved Bone Phosphate,	Lower & Co., Thomasville,	10.30

For explanation of these tables, see p. 21.

FERTILIZERS.

Acid and Potash.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds.				Computed commercial value at Dep't rating (see p. 20.)	Selling price at the point of selection.	Sample number.
Soluble in water.	Reverted.	Insoluble.	Total.		Available.		Present as muriate.	Present as sulphate.	Total.				
			Found.	Guaranteed.	Found.	Guaranteed.			Found.	Guaranteed.			
4.82	5.87	2.48	**13.17**	.....	**10.69**	10.00	1.03	.....	**1.03**	1.00	13.34	17.00	418
5.41	5.43	2.31	**13.15**	.....	**10.84**	10.00	1.13	.....	**1.13**	1.00	13.53	18.00	185
1.82	6.70	3.81	**12.33**	.....	**8.52**	8.00	3.37	.....	**3.37**	3.00	14.54	20.00	328
1.63	8.76	4.29	**14.68**	.....	**10.39**	10.00	1.17	.....	**1.17**	1.00	13.57	17.00	417
6.55	4.50	1.47	**12.52**	12.00	**11.05**	11.00	1.91	.....	***1.91**	2.43	14.29	18.00	421
8.73	4.16	.71	**13.60**	.....	**12.89**	....	1.70	.....	**1.70**	.....	15.19	16.00	585
1.07	8.44	2.76	**12.27**	.....	***9.51**	10.00	2.67	.....	**2.67**	2.00	13.93	14.00	494
6.94	5.95	1.81	**14.70**	12.00	**12.89**	10.00	1.10	.....	**1.10**	.....	14.76	20.00	479
5.36	4.91	1.15	**11.42**	.....	**10.27**	9.00	2.15	.....	**2.15**	2.00	13.81	14.50	165
8.61	4.11	1.83	**14.05**	.....	**12.72**	10.00	2.56	.....	**2.56**	2.00	16.15	14.00	102
2.69	7.50	2.90	**13.09**	12.50	**10.19**	10.00	2.48	.....	**2.48**	2.25	14 44	15.00	75
8.48	2.82	.61	**11.91**	.....	**11.30**	.....	2.81	.....	**2.81**	.....	15.27	17.00	62
5.41	5.69	2.48	**13.58**	.....	**11.10**	11.00	.49	.....	***.49**	2.00	13.12	15.00	94
8.81	2.73	.93	**12.97**	11.50	**12.04**	10.00	1.97	.....	***1.97**	2.50	14.95	17.00	587
3.51	7.58	1.85	**12.94**	12.00	**11.09**	11.00	2.30	.....	**2.30**	2.00	14.50	20.00	317
7.43	4.44	1.33	**13.20**	9.00	**11.87**	8.00	1.97	.....	***1.97**	2.00	14.90	13.00	210

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
	S. M. HESS & BRO., PHILADELPHIA, PA.		
201	Emperor Phosphate,	L. T. Stallsmith, Heidlersburg,	10.91
	JARECKI CHEMICAL CO., SANDUSKY, OHIO.		
354	Dissolved Bone with Potash,	Eugene Burnette, Utica,	10.22
	LAZARETTO GUANO CO., BALTIMORE, MD.		
308	Lazaretto Alkaline Phosphate,	Z. H. Cashman, New Oxford,	9.32
	MARYLAND FERTILIZER CO., BALTIMORE, MD.		
213	Alkaline Bone,	William Wire, Yoe,	11.40
433	Linden Super Phosphate,	U. D. Brancher, Somerset,	11.58
	MONUMENTAL CHECMICAL CO., BALTIMORE, MD.		
70	Soluble Bone Phosphate and Potash,	Martin Greenleaf, Oxford,	9.43
	PACKER'S UNION FERTILIZER CO., NEW YORK.		
311	Wheat, Oats and Corn Fertilizer,	J. A. Stalsmith, Grant Sta.,	9.06
392	Wheat, Oats and Clover Fertilizer,	J. S. Bumstead, Pleasantville,	7.42
	PATAPSCO GUANO CO., BALTIMORE, MD.		
603	Patapsco H. G. Bone and Potash,	C. B. Moore, New Lexington,	7.31
	J. DOUGLAS PERKINS, COATESVILLE, PA.		
500	Perkins' Globe Phosphate,	A. H. Potts & Co., Parkesburg,	9.65
	MORO PHILLIPS CHEMICAL CO., PHILADELPHIA, PA.		
152	Alkaline Bone,	Lee Cooper, Oxford,	10.63
	R. H. POLLOCK, BALTIMORE, MD.		
8	Pollock's Victor Bone Phosphate,	W. A. Herman & Co., Mount Holly,	8.78
	RAMSBERG FERTILIZER CO., FREDERICK, MD.		
441	Alkaline Phosphate,	E. Eppelman, Bendersville Station	11.70
	RASIN FERTILIZER CO., BALTIMORE, MD.		
24	Bone and Potash.	J. W. Simmons, Hogestown,	8.75
	JOHN S. REESE & CO., BALTIMORE, MD.		
463	H. G. Potash Mixture,	Kohr & Eberhart, Bashore Sta.,	5.76
461	Reese's Grass and Grain,	Kohr & Eberhart, Bashore Sta.,	9.40
454	Reese's Wheat Special,	N. H. Spangler, Rossville,	9.07

For explanation of these tables, see p. 21.

FERTILIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds.						
			Total.		Available.				Total.				
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.	Computed commercial value at Dept rating (see p. 20.)	Selling price at the point of selection.	Sample number.
8.03	3.93	1.12	**13.08**	11.00	**11.96**	10.00	1.99	.....	**1.99**	1.00	15.01	17.50	201
7.54	3.80	1.08	***12.42**	13.00	***11.34**	12.00	4.92	.....	**4.92**	4.00	17.52	21.00	354
7.22	4.81	1.24	**13.27**	.....	**12.03**	11.00	2.09	.....	**2.09**	2.00	15.07	14.00	308
8.61	4.14	.80	**13.55**	12.75	**12.75**	11.75	3.39	.....	***3.39**	3.50	16.84	17.00	213
10.05	3.13	.87	**14.05**	12.00	**13.18**	11.00	1.33	.....	***1.33**	2.50	15.22	18.00	433
4.35	5.79	1.47	**11.61**	.....	**10.14**	10.00	2.42	.....	**2.42**	2.00	13.99	11.00	70
7.89	4.25	1.43	**13.57**	.....	**12.14**	11.00	1.87	.....	***1.87**	2.00	15.03	.....	311
8.33	4.72	1.67	**14.72**	.....	**13.05**	11.00	.....	1.79	***1.79**	2.00	15.92	21.00	382
5.83	5.62	.46	***11.91**	12.00	**11.45**	11.00	3.76	.....	***3.76**	5.00	15.97	17.50	603
7.00	4.62	1.45	**13.07**	.....	**11.62**	11.00	2.15	.....	**2.15**	2.00	14.92	14.00	560
6.89	4.17	.68	**11.74**	10.00	**11.06**	9.00	1.76	.....	***1.76**	2.00	13.90	15.00	152
4.62	5.45	4.31	**13.78**	10.00	**9.47**	9.00	1.62	.....	**1.62**	1.00	13.77	18.00	8
4.84	6.62	1.87	**13.33**	11.00	**11.46**	10.00	2.52	.....	**2.52**	2.00	15.12	16.00	441
11.05	4.56	1.16	**16.77**	.....	**15.61**	12.00	.88	.....	***.88**	1.00	16.44	.....	24
9.76	3.65	3.45	**16.87**	.....	**13.41**	.....	.53	5.09	**5.62**	.....	21.50	18.00	463
7.14	4.66	.65	**12.43**	.....	**11.80**	10.00	1.94	.....	***1.94**	2.00	14.58	17.00	461
7.80	5.55	1.31	**14.66**	.....	**13.35**	10.00	1.47	.....	**1.47**	1.00	15.30	17.00	454

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.
	ISAAC ROBINSON, BALTIMORE, MD.		
267	Potashed Bone,	A. Galbraith, Woodbine,	8.84
	SCOTT FERTILIZER CO., ELKTON, MD.		
168	Tip Top Soluble Bone and Potash,	J. Swift & Bro., Fulton House,	8.13
	SHARPLESS & CARPENTER, PHILADELPHIA, PA.		
16	Soluble Bone and Potash,	Henry C. Babble, Carlisle Spring,	12.21
	SHELDON & CO., BUFFALO, N. Y.		
703	Sheldon's Dissolved Bone and Potash,	Wallace Sherline, Wilmore,	8.55
	H. H. SMYSER, BALTIMORE, MD.		
467	Chicago Crop Grower,	H. H. Smyser, York,	6.75
	STANDARD FERTILIZER CO., BOSTON, MASS.		
58	Standard Bone and Potash,	Rice & Heintzleman, Chambersburg	11.24
	SUSQUEHANNA FERTILIZER CO., BALTIMORE, MD.		
26	Susquehanna Alkaline Bone Phosphate,	M. A. Fink, Idaville,	10.68
132	Susquehanna Soluble Bone and Potash,	Richards & Owens, Fairville,	8.80
	I. P. THOMAS & SONS CO., PHILADELPHIA, PA.		
50	Special Corn Fertilizer,	T. J. Comerer, McConnellsburg,	10.68
	M. E. WHEELER & CO., RUTLAND, VT.		
342	Grass and Oats,	Wesley,	7.21
	ROBERT A. WOOLDRIDGE CO., BALTIMORE, MD.		
83	Wooldridge's Liberty Bell Potash Mixture,	F. G. Evans, Kelton,	11.94
	YORK CHEMICAL WORKS, YORK, PA.		
579	Dempwolf's Black Cross Phosphate and Potash,	J. L. Brodbeck, Hanover,	6.17
224	Red Cross Phosphate and Potash,	York Chemical Works, York,	7.91
	ZELL GUANO CO., BALTIMORE, MD.		
483	Zell's Electric,	J. F. Pryor, Rockland,	6.59

For explanation of these tables, see p. 21.

FERTILIZERS—Continued.

Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds.				Computed commercial value at Dep't rating (see p. 20.)	Selling price at the point of selection.	Sample number.
			Total.		Available.				Total.				
Soluble in water.	Reverted.	Insoluble.	Found.	Guaranteed.	Found.	Guaranteed.	Present as muriate.	Present as sulphate.	Found.	Guaranteed.			
2.43	8.58	1.11	**12.12**	.....	**11.01**	10.00	2.45	.....	**2.45**	2.00	14.19	15.00	267
11.08	3.35	.36	**14.79**	.....	**14.43**	11.00	1.96	.....	***1.96**	2.00	16.53	14.00	168
5.56	5.92	1.72	**13.20**	.....	**11.48**	10.00	2.64	.....	**2.64**	2.00	15.28	.....	16
8.23	3.59	.41	**12.23**	11.00	**11.82**	10.00	1.85	.....	***1.85**	2.00	14.53	20.00	703
2.02	8.43	2.25	**12.70**	12.00	**10.45**	10.00	2.65	.....	**2.65**	2.00	14.43	16.00	467
6.23	3.39	1.50	**11.12**	10.00	**9.62**	8.00	2.70	.....	**2.70**	2.50	14.20	14.50	58
6.51	4.62	2.30	**13.43**	12.00	**11.13**	10.00	2.43	.....	**2.43**	2.00	15.20	.....	46
4.66	7.46	1.62	**13.74**	12.00	**12.12**	10.00	2.06	.....	**2.06**	2.00	14.91	12.50	132
1.35	6.57	4.96	**12.88**	12.00	***7.92**	10.00	5.60	1.52	**7.12**	6.50	18.63	.....	50
3.73	7.59	1.96	**13.28**	12.00	**11.32**	11.00	2.39	.....	**2.39**	2.00	14.82	25.00	242
8.01	3.86	1.23	**13.10**	12.00	**11.87**	11.00	2.13	.....	**2.13**	2.00	15.13	15.00	83
3.94	7.00	2.15	**13.09**	.....	**10.94**	.....	2.84	.....	**2.84**	.....	15.13	13.00	579
5.28	6.07	.72	**12.07**	.....	**11.35**	.....	5.95	.....	**5.95**	.....	18.18	15.00	224
7.08	4.36	1.53	**12.97**	.....	**11.44**	10.00	2.47	.....	**2.47**	2.00	15.16	19.50	482

*Constituent falls below guarantee.

DISSOLVED BONE

Furnishing Phosphoric

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.
	BAUGH & SONS CO., PHILADELPHIA, PA.	
125	Baugh's Dissolved Animal Bone,	S. C. Walker & Co., Chadd's Ford Junc.,
	LISTER'S AGR'L CHEM. WORKS, NEWARK, N. J.	
497	Lister's Celebrated Ground Bone Acidulated,	W. S. Hastings, Atglen,
	MONUMENTAL CHEMICAL CO., BALTIMORE, MD.	
232	Juniata Soluble Bone,	R. A. Lentz, Red Lion,
	NORTHWESTERN FERTILIZER CO., CHICAGO, ILL.	
323	Acidulated Bone,	O. B. Cross, Clintonville,
373	Quick Acting Phosphate,	James L. Peebles, Wallaceville,
	PITTSBURG PROVISION CO., PITTSBURG, PA.	
412	Guano Fertilizer,	William Sanford & Son, Franklin,
	RAMSBERG FERTILIZER CO., FREDERICK, MD.	
582	Dissolved Animal Bone,	Duttera & Esaley, Hanover,
	RASIN FERTILIZER CO., BALTIMORE, MD.	
228	Rasin Dissolved Bone,	J. C. Myers, Red Lion,

For explanation of these tables, see p. 21.

FERTILIZERS.

Acid and Nitrogen.

Moisture in 100 pounds.	Phosphoric Acid in 100 Pounds.							Nitrogen in 100 Pounds.		Computed commercial value of 2,000 pounds at Dep't rating (see p. 20).	Selling price at the point of selection.	Sample number.
	Soluble in water.	Reverted.	Insoluble.	Total.		Available.		Found.	Guaranteed.			
				Found.	Guaranteed.	Found.	Guaranteed.					
4.36	1.71	12.91	4.11	18.76	.....	*14.62	15.00	3.07	1.65	31.41	25.00	125
4.65	3.60	4.35	5.85	13.80	.....	7.95	.....	2.69	2.68	24.10	25 00	497
6.46	6.33	4.97	1.27	*12.57	14.00	*11.30	12.00	.39	.....	15.55	15.00	232
6.81	7.23	3.65	2.15	13.03	12.00	10.88	10.00	*.75	.82	19.40	21.00	323
6.62	6.53	4.09	2.27	12.89	.....	10.62	.....	1.05	.....	21.72	18.00	373
2.33	.92	4.82	7.99	13.73	11.00	*5.74	9.00	1.76	1.65	19.24	21.00	412
5.43	5.08	5.08	5.63	15.79	.....	10.16	.....	1.77	.....	23.40	25.00	582
9.82	6.67	3.07	2.68	12.42	.....	*9.74	10.00	2.05	1.65	22.66	24.00	228

*Constituent falls below guarantee.

GROUND BONE FERTILIZERS.
Furnishing Phosphoric Acid and Nitrogen.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.	Mechanical Analysis.		Chemical Analysis.				Computed commercial value at Dep't rating (see p. 20).	Selling price at the point of selection.	Sample number.
				Diameter less than 1-50 inch, "fine" (per cent.)	Diameter greater than 1-50 inch, "coarse" (per cent.)	Phosphoric Acid.		Nitrogen.				
						Found.	Guaranteed.	Found.	Guaranteed.			
	BAUGH & SONS CO., PHILADELPHIA, PA.											
126	Baugh's Bone Meal,	S. C. Walker & Co., Chadd's Ford Jnc.,	7.26	78	22	*22.22	25.00	3.98	3.30	29.36	.....	126
136	Baugh's Ground Raw Bone,	Darlington & Hammerman, Rosedale,	7.97	55	45	*23.05	25.00	3.92	3.30	27.57	27.00	136
127	Domestic Animal Bone Dust,	S. C. Walker & Co., Chadd's Ford Jnc.,	6.31	66	34	26.37	25.00	1.99	1.65	26.66	25.00	127
	BERG CO., PHILADELPHIA, PA.											
89	Berg's Raw Bone Fine,	E. A. & J. L. Pennock, Chatham,	6.25	75	25	22.53	20.00	3.88	3.30	29.13	26.00	89
	A. H. BLAKER & CO., FOX CHASE, PA.											
140	Blaker's Steamed Bone,	P. Ramsey, Kelton.	3.27	91	9	26.74	22.50	*2.63	3.30	31.08	30.00	140
	CHANDLER, RUSSELL & CHANDLER. NEWARK, N. J.											
775	Russell's Ground Bone,	R. C. Fairlamb & Son, Brandw'n Sm't,	3.93	60	40	26.01	.....	2.74	.....	27.50	25.00	775
	CHEMICAL CO. OF CANTON, BALTIMORE, MD.											
498	Baker's Standard Ground Bone,	W. S. Hastings, Atglen,	5.00	82	18	*17.65	18.00	3.84	3.30	25.87	25.00	498

For explanation of these tables, see p. 21.

	HENRY COPE & CO., LINCOLN UNIVERSITY,											
766	Steamed Bone,	Passmore & Gillespie, Sylmar,	5.05	75	25	**26.47**	.....	**2.90**	.....	29.76	25.00	766
	JOSIAH COPE & CO., LINCOLN UNIVERSITY, PA.											
100	Pure Ground Bone,	C. Criswell, Gum Tree,	7.50	64	36	**22.44**	21.00	**3.90**	3.30	28.00	26.00	100
534	Pure Raw Bone,	Solomon Pusey, West Grove,	5.02	75	25	**23.55**	21.00	**4.21**	3.30	30.57	27.00	534
	J. A. CRANSTON CO., NEWPORT, DELAWARE.											
97	Bone Meal,	Wm. C. Jones & Sons, Doe Run,	5.06	80	20	**21.46**	18.00	**3.90**	3.30	28.75	27.00	97
	CUMBERLAND BONE PHOSPHATE CO., PORTLAND, ME.											
748	Cumberland Fine Ground Bone,	A. W. Glenn, Garman's Mill,	3.54	77	23	**23.80**	14.00	**3.01**	1.65	28.18	29.00	748
	DETRICK FERTILIZER AND CHEMICAL CO., BALTIMORE, MD.											
709	Pure Raw Bone,	J. Bodenschatz, Willmore,	7.00	74	26	**23.06**	23.00	**3.73**	2.06	29.07	28.00	709
	JAS. G. DOWNWARD & CO., COATESVILLE, PA.											
64	Pure Ground Bone,	Thomas Agnew, Kelton,	5.34	65	35	**24.25**	20.00	**3.62**	3.30	28.71	27.00	64
	EUREKA FERTILIZER CO., PERRYVILLE, MD.											
90	Bone Meal,	E. A. & J. L. Pennock, Chatham,	6.23	83	17	**27.54**	22.00	***1.88**	3.30	29.11	25.00	90
3	Pure Ground Bone,	Chatham,	7.04	72	28	***20.93**	22.00	**3.75**	3.30	28.17	27.00	3
	R. C. FAIRLAMB & SON, BRANDYWINE SUMMIT, PA.											
776	Pure Ground Bone,	R. C. Fairlamb & Son, Brandw'n Sm't,	5.38	60	40	**25.40**	.....	**3.01**	.....	27.66	25.90	776
	LISTER'S AGRICULTURAL CHEMICAL WORKS, NEWARK, N. J.											
249	Lister's Pure Raw Bone Meal,	Grove & Uffelman, Brogueville,	3.85	69	31	**24.43**	23.00	**2.72**	2.68	27.19	28.00	249

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.	Moisture in 100 pounds.	Mechanical Analysis.		Chemical Analysis.				Computed commercial value at Dep't rating (see p. 20).	Selling price at the point of selection.	Sample number.
				Diameter less than 1-50 inch, "fine" (per cent.)	Diameter greater than 1-50 inch, "coarse" (per cent.)	Phosphoric Acid.		Nitrogen.				
						Found.	Guaranteed.	Found.	Guaranteed.			
	MICHIGAN CARBON WORKS, DETROIT, MICH.											
621	Desiccated Bone,	Hoch Brothers, Chicora,	3.54	80	20	**31.17**	25.00	**1.70**	1.24	31.08	30.00	621
	MILSOM RENDERING AND FERTILIZER CO., BUFFALO, N. Y.											
360	Cyclone Pure Bone Meal,	Gates & Hiller, Cooperstown,	5.81	75	25	**22.51**	22.00	**3.05**	2.47	27.14	32.00	360
	PACIFIC GUANO CO., NEW YORK.											
690	Fine Ground Bone,	J. M. Harshberger & Sons, Johnstown,	3.19	84	16	**19.03**	14.00	**2.28**	1.65	23.50	28.00	690
	PATAPSCO GUANO CO., BALTIMORE, MD.											
436	Pure Ground Bone,	A. C. Davis, Pugh,	8.53	55	45	**21.71**	20.62	**4.18**	3.71	27.32	28.00	436
	PITTSBURG PROVISION CO., PITTSBURG, PA.											
410	Pure Raw Bone Meal,	William Sanford & Son, Franklin,	4.29	79	21	*__22.30__	24.00	*__3.72__	4.12	28.83	28.00	410
	R. H. POLLOCK, BALTIMORE, MD.											
554	Pollock's Soft Ground Bone,	J. P. Stoltzfus, Ronks,	5.26	74	26	**16.86**	14.00	*__2.23__	2.47	20.96	23.00	554
	PUGH & LYONS, OXFORD, PA.											
149	Ground Raw Bone,	S. R. Dickey & Co., Oxford,	6.71	58	42	**22.59**	20.00	**3.90**	3.30	27.54	27.00	149

For explanation of these tables, see p. 21.

	RAMSBERG FERTILIZER CO., FREDERICK, MD.												
583	Pure Raw Bone,	Duttera & Esaley, Hanover,	5.03	80	20	**26.42**	.....	**3.64**	.....	31.96	27.00	583
	SCOTT FERTILIZER CO., ELKTON, MD.												
491	Scott's Pure Ground Bone,	W. S. Hastings, Atglen,	7.63	51	49	**24.77**	22.00	**4.07**	3.30	28.62	28.50	491
	SHARPLESS & CARPENTER, PHILA., PA.												
120	Pure Bone Meal,	Bailey & Larkin, Northbrook,	6.95	79	21	**22.87**	18.00	**3.96**	3.30	29.85	28.00	120
	SHELDON & CO., BUFFALO, N. Y.												
704	Sheldon's Fine Ground Bone,	Wallace Shirland, Wilmore,	6.61	79	21	***21.50**	22.00	**2.89**	2.70	26.38	25.60	704
197	Sheldon's Pure Bone Meal,	Kennedy & McNary, Cannonsburg,	8.76	74	26	***19.96**	22.00	**3.25**	2.70	25.59	28.00	197
	M. L. SHOEMAKER & CO., PHILADELPHIA, PA.												
172	Pure Raw Bone Meal,	Chester Co. Asso'n of Farmers, Kelton,	6.65	75	25	**22.88**	20.00	**4.17**	3.30	30.78	26.00	172
169	Swift Sure Bone Meal,	Chester Co. Asso'n of Farmers, Kelton,	4.11	88	12	**22.93**	20.00	**5.42**	4.12	34.63	30.00	169
	SUSQUEHANNA FERTILIZER CO., BALTIMORE, MD.												
154	Packing House Bone,	Geo. B. Passmore & Sons, Oxford,	3.60	63	37	**20.60**	20.00	***3.27**	3.30	25.14	25.60	154
155	Pure Ground Bone,	Geo. B. Passmore & Sons, Oxford,	7.74	56	44	**22.32**	20.00	**3.94**	3.30	27.26	26.00	155
	SWIFT & CO., CHICAGO, ILL.												
525	Swift's Pure Ground Steamed Bone,	Wells & Walker, Downingtown,	3.56	90	10	**27.67**	23.75	***2.56**	3.30	31.47	25.00	525
	EMIL WAHL, PHILADELPHIA, PA.												
123	Philadelphia Button Bone Dust,	W. J. Pratt, Pocopson,	14.53	71	29	***24.92**	26.00	**3.36**	3.19	29.23	27.00	123
	M. E. WHEELER & CO., NEW YORK.												
143	M. E. Wheeler & Co's Pure Ground Bone,	J. A. Wiley, New London,	5.59	70	30	**23.09**	22.00	**3.11**	1.65	27.21	26.00	143
	ROBT. A. WOOLDRIDGE CO., BALTIMORE, MD.												
84	Wooldridge's Tuckahoe Bone Meal,	Franklin G. Evans, Kelton,	6.08	69	31	**15.92**	15.00	**2.72**	2.47	21.36	23.00	84

*Constituent falls below guarantee.

ACIDULATED ROCK

Furnishing

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.
	BALTIMORE GUANO CO., BALTIMORE, MD.	
212	Farmer's Dissolved Bone,	E. S. Brooks, York,
	BAUGH & SONS CO., PHILADELPHIA, PA.	
56	H. G. Acid Phosphate,	C. F. Hendricks, Mercersburg,
	A. H. BLAKER & CO., FOX CHASE, PA.	
139	Blaker's Wonder Fertilizer,	P. Ramsey, Kelton,
	BOWKER FERTILIZER CO., BOSTON AND NEW YORK.	
329	Bowker's Dissolved Bone,	James Bennet, Emlenton,
	S. B. BRODBECK, BRODBECK'S, PA.	
305	Ruth's Dissolved Bone Phosphate,	E. H. Sterner, Jefferson,
	BRADLEY FERTILIZER CO., BOSTON, MASS.	
20	Bradley's Dissolved Bone,	W. H. Zearing, Shiremanstown,
	BRUMFIELD & FOSTER, COLORA, MD.	
134	B. & F. H. G. Acid Phosphate,	Richards & Owens, Fairville,
	CHEMICAL COMPANY OF CANTON, BALTIMORE, MD.	
446	Baker's Dissolved Bone Phosphate,	D. B. Meyers, Gardner's Station,
47	Pure Dissolved S. C. Bone,	Greencastle Elevator Co., Greencastle,
	CLEVELAND DRYER CO., CLEVELAND, OHIO.	
333	Horsehead Phosphate,	F. Surrena, Nectarine,
	E. FRANK COE, NEW YORK.	
306	H. G. Soluble Bone,	G. E. Sprenkle, Nashville,
	HENRY COPE & CO., LINCOLN UNIVERSITY, PA.	
146	Acid Phosphate,	S. K. Chambers & Bro., Elk View,
	JOSIAH COPE & CO., LINCOLN UNIVERSITY, PA.	
93	Acidulated Phosphate,	C. Criswell, Gum Tree,
	J. A. CRANSTON CO., NEWPORT, DELAWARE.	
122	Horse Shoe Soluble Bone,	Bailey & Larkin, Northbrook,

For explanation of these tables, see p. 21.

PHOSPHATES.

Phosphoric Acid.

Moisture in 100 pounds.	Phosphoric Acid in 100 Pounds.							Computed commercial value at Dep't rating (see p. 20).	Selling price at the point of selection.	Sample number.
	Soluble in water.	Reverted.	Insoluble.	Total.		Available.				
				Found.	Guaranteed.	Found.	Guaranteed.			
7.42	9.43	4.49	3.42	**17.34**	.....	*13.92	14.00	13.93	15.00	212
9.14	11.36	3.64	1.53	**16.53**	.....	**15.00**	14.00	14.13	12.00	56
11.55	11.19	3.25	1.01	*15.45	16.00	**14.44**	14.00	13.58	14.00	139
2.27	9.54	5.84	1.68	**17.06**	13.00	**15.38**	11.00	14.19	18.00	329
9.88	10.71	4.51	.88	**16.10**	15.00	**15.22**	14.00	13.93	11.50	305
10.02	8.92	4.26	1.07	**14.25**	13.00	**13.18**	12.00	12.58	15.00	20
3.77	11.28	5.30	3.54	**20.12**	.....	**16.58**	.....	15.76	11.00	131
9.82	9.45	3.75	3.46	**16.66**	.....	*13.20	14.00	13.51	13.00	446
9.19	9.60	3.91	3.16	**16.67**	.....	*13.51	14.00	13.59	.....	47
7.13	7.90	4.84	1.60	**14.34**	12.00	**12.74**	10.00	12.38	18.00	333
10.16	8.80	5.10	2.36	**16.26**	.....	*13.90	14.00	13.45	12.00	306
5.66	13.60	4.71	1.00	**19.31**	15.00	**18.31**	14.00	16.17	11.00	146
9.00	10.79	4.35	1.75	**16.89**	.....	**15.14**	14.00	14.23	11.00	98
6.34	11.77	4.24	1.50	**17.51**	16.00	**16.01**	14.00	14.76	11.00	122

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.
	DETRICK FERTILIZER AND CHEMICAL CO., BALTIMORE, MD.	
44	Dissolved S. C. Bone,	West & West, Waynesboro,
	LOUIS F. DETRICK, BALTIMORE, MD.	
250	Orchilla Guano,	Grove & Uffelman, Brogueville,
72	XXtra Acid Phosphate,	W. H. Taylor, Oxford,
	JAMES G. DOWNWARD & CO., COATESVILLE, PA.	
63	Acid Phosphate,	Thomas Agnew, Kelton,
	EUREKA FERTILIZER COMPANY, PERRYVILLE, MD.	
4	P. & P. Super Phosphate (S. C. Rock),	Chatham,
91	K. & G. Acid Phosphate,	E. A. & J. L. Pennock, Chatham,
	GREAT EASTERN FERTILIZER CO., NEW YORK.	
117	Dissolved Bone,	W. P. Cloud, Leonard,
	GRIFFITH & BOYD, BALTIMORE, MD.	
562	H. G. Acid Phosphate,	E. A. Barb, Seven Valleys,
	S. M. HESS & BROS., PHILADELPHIA, PA.	
163	H. G. Acid Phosphate,	Kingsbridge,
	JARECKI CHEMICAL CO., SANDUSKY, O.	
351	C. O. D. or Clover Leaf Phosphate,	G. A. Blair, Wesley,
	WILLIAM C. JONES & SONS, DOE RUN, PA.	
96	H. G. Diss. S. C. Rock,	Wm. C. Jones & Sons, Doe Run,
	KEYSTONE CHEMICAL FERTILIZER CO., PHILADELPHIA, PA.	
545	Keystone Rock,	Hershey & Leaman, Gordonville,
	LAZARETTO GUANO CO., BALTIMORE, MD.	
245	Pure Dissolved S. C. Bone,	Grove & Uffelman, Brogueville,
	MARYLAND FERTILIZER CO., BALTIMORE, MD.	
558	Dissolved S. C. Bone,	E. S. Minnick, Brilhart Station,
	MILLER FERTILIZER CO., BALTIMORE, MD.	
157	S. C. Rock,	M. L. Harkins, Oxford,

For explanation of these tables, see p. 21.

FERTILIZERS—Continued.

Moisture in 100 pounds.	Phosphoric Acid in 100 Pounds.							Computed commercial value at Dep't rating (see p. 20).	Selling price at the point of selection.	Sample number.
	Soluble in water.	Reverted.	Insoluble.	Total.		Available.				
				Found.	Guaranteed.	Found.	Guaranteed.			
10.47	11.76	3.24	1.40	**16.40**	16.00	**15.00**	14.00	14.12	13.00	44
7.55	.....	5.43	11.79	**17.22**	.....	**5.43**	.....	14.70	16.00	250
10.87	11.70	2.90	1.39	**15.99**	14.75	**14.60**	14.00	13.87	11.00	72
8.43	13.42	3.38	.42	**17.22**	.....	**16.80**	14.00	15.03	14.00	63
12.61	11.49	3.38	2.80	**17.67**	15.00	**14.87**	14.00	14.50	12.00	4
9.97	7.54	4.30	3.62	**15.46**	14.00	***11.84**	12.00	12.51	11.00	91
8.11	9.94	4.56	1.93	**16.43**	16.00	**14.50**	14.00	13.81	11.00	117
9.35	11.28	3.19	1.89	**16.36**	15.00	**14.47**	14.00	13.90	.....	562
5.50	12.66	4.36	.45	**17.47**	.....	**17.02**	14.00	15.09	11.00	163
10.66	9.72	5.35	1.69	**16.76**	15.00	**15.07**	14.00	14.01	20.00	351
8.56	14.01	3.84	.27	**18.12**	15.00	**17.85**	14.00	15.69	11.00	96
4.07	8.94	5.37	1.61	**15.92**	.....	**14.31**	.....	13.44	15.00	545
8.88	12.26	3.81	.62	**16.69**	.....	**16.07**	14.00	14.54	15.50	245
8.37	12.80	4.04	.93	**17.77**	15.50	**16.84**	14.50	15.18	11.50	558
10.57	9.50	5.68	.97	**16.15**	.....	**15.18**	.....	13.81	12.50	157

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.
	MONUMENTAL CHEMICAL CO., BALTIMORE, MD.	
258	Acid Phosphate,	A. M. Grove & Co., Muddy Creek Forks,
68	Monumental Acid Phosphate,	Martin Greenleaf, Oxford,
130	Sea Wall Special S. C. Diss. Bone,	S. C. Walker & Co., Chadd's Ford Junction.
	NIAGARA FERTILIZER WORKS, BUFFALO, N. Y.	
325	Niagara Queen City Phosphate,	J. A. McKee, Clintonville,
	PACKER'S UNION FERTILIZER CO., NEW YORK.	
28	Banner Wheat Grower,	D. B. Meyers, Gardner's Station,
	PIEDMONT MT. AIRY GUANO CO., BALTIMORE, MD.	
39	Rock,	Jacob F. Good, Midvale,
	MORO PHILLIPS CHEMICAL CO., PHILADELPHIA.	
111	Soluble Bone Phosphate,	Charles Lawrence, Glen Hall,
	R. H. POLLOCK, BALTIMORE, MD.	
9	Pollock's Diss. S. C. Bone,	W. A. Herman & Co., Mt. Holly,
	RAMSBERG FERTILIZER CO., FREDERICK, MD.	
440	Dissolved Bone Super Phosphate,	E. Eppleman, Bendersville Station,
	RASIN FERTILIZER CO., BALTIMORE, MD.	
429	Rasin's Acid Phosphate,	Peter Fink, Somerset,
	ISAAC ROBINSON, BALTIMORE, MD.	
268	H. G. Soluble Phosphate,	A. Galbraith, Woodbine,
	SCOTT FERTILIZER CO., ELKTON, MD.	
167	Scott's Tip Top Soluble Bone,	J. Swift & Bro., Fulton House,
	SHARPLESS & CARPENTER, PHILADELPHIA, PA.	
87	Diss. S. C. Phosphate,	W. W. Polk, Kelton,
	SHELDON & CO., BUFFALO, N. Y.	
339	Sheldon's Dissolved Bone,	J. B. Miller, Wesley,
	M. L. SHOEMAKER & CO., PHILADELPHIA, PA.	
173	14 Dissolved S. C. Rock,	Chester Co. Association Farmers, Kelton,
170	16 Dissolved S. C. Rock,	Chester Co. Association Farmers, Kelton,

For explanation of these tables, see p. 21.

FERTILIZERS—Continued.

Moisture in 100 pounds.	Phosphoric Acid in 100 Pounds.							Computed commercial value at Dep't rating (see p. 20).	Selling price at the point of selection.	Sample number.
	Soluble in water.	Reverted.	Insoluble.	Total.		Available.				
				Found.	Guaranteed.	Found.	Guaranteed.			
11.47	11.92	3.19	.88	**15.99**	.....	**15.11**	14.00	14.01	15.50	258
11.21	12.62	2.43	.56	**15.61**	.....	**15.05**	14.00	13.95	16.00	68
7.56	6.61	6.26	1.40	**14.27**	13.00	**12.87**	12.00	12.21	11.00	139
4.29	9.00	4.15	1.78	**14.93**	13.00	**13.15**	11.00	12.82	17.50	325
9.19	8.89	3.30	.36	**12.55**	11.00	**12.19**	10.00	11.71	15.00	28
11.63	10.80	2.89	1.28	***14.97**	15.00	**13.69**	13.00	13.17	14.00	39
11.36	9.95	4.56	1.07	**15.58**	15.00	**14.51**	14.00	13.48	12.00	111
9.14	11.37	3.65	.91	**15.93**	15.00	**15.02**	14.00	13.93	14.50	9
11.27	11.42	4.12	1.58	**17.12**	16.00	**15.54**	14.00	14.44	.....	440
10.84	11.98	4.87	.39	**17.14**	.....	**16.85**	14.00	14.86	14.00	429
10.44	13.74	2.06	.34	**16.14**	.....	**15.80**	14.00	14.47	11.00	268
7.86	12.63	4.45	.40	**17.48**	.....	**17.08**	14.00	15.13	12.00	167
8.27	9.89	4.61	1.49	**15.99**	.....	**14.50**	14.00	13.63	13.25	87
5.70	7.17	3.54	.39	**11.10**	11.00	**10.71**	10.00	10.63	18.00	339
11.82	9.58	6.68	1.18	**17.44**	.....	**16.26**	14.00	14.55	9.70	173
14.85	13.46	3.97	.19	**17.53**	.....	**17.43**	16.00	15.32	10.70	170

*Constituent falls below guarantee.

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.
	SOUTHERN FERTILIZER CO., YORK, PA.	
204	Dissolved Bone Phosphate,	D. E. Brown, East Berlin,
	STANDARD FERTILIZER CO., BOSTON, MASS.	
59	Standard Dissolved Bone Phosphate,	Rice & Heintzleman, Chambersburg,
	E. H. STERNER, CODORUS, PA.	
304	Sterner's Diss. Bone Phosphate,	E. H. Sterner, Jefferson,
	SUSQUEHANNA FERTILIZER CO., BALTIMORE, MD.	
27	Soluble Bone Phosphate,	M. A. Fink, Idaville,
79	Superior Rock Phosphate,	T. Brown, Kelton,
	I. P. THOMAS & SONS CO., PHILADELPHIA, PA.	
51	S. C. Phosphate,	T J. Comerer, McConnellsburg,
	TYGERT-ALLEN FERTILIZER CO., PHILADELPHIA, PA.	
181	Dissolved Bone Phosphate,	Joseph Taylor, Circleville,
115	Samuel H. Howitz's Acid Phosphate,	Marshall Matlack, Glen Hall,
	JOHN WHANN & SONS, PHILADELPHIA, PA.	
162	A. A. Acid Phosphate,	Atwood Criswell, Oxford,
	W. E. WHANN, WILLIAM PENN, PA.	
499	Whann's S. C. Phosphate,	Thomas Jones, Parkesburg,
	M. E. WHEELER & CO., RUTLAND, VT.	
381	Electrical Dissolved Bone,	S. Bennehoff, Cherry Tree,
	ROBERT A. WOOLDRIDGE CO., BALTIMORE, MD.	
81	Florida Acid Phosphate,	Franklin G. Evans, Kelton,
	ZELL GUANO CO., BALTIMORE, MD.	
35	Dissolved Bone Phosphate,	W. C. Rodgers, Fairfield,

For explanation of these tables, see p. 21.

FERTILIZERS—Continued.

Moisture in 100 poupnds.	Phosphoric Acid in 100 Pounds.							Computed commercial value at Dep't rating (see p. 20).	Selling price at the point of sellection.	Sample number.
	Soluble in water.	Reverted.	Insoluble.	Total.		Available.				
				Found.	Guaranteed.	Found.	Guaranteed.			
9.82	11.91	3.77	.65	**16.33**	.....	**15.68**	14.00	14.29	14.00	204
9.33	9.60	5.83	1.42	**16.85**	15.00	**15.43**	13.00	14.13	12.50	59
8.52	12.78	4.28	.38	**17.44**	.....	**17.06**	14.00	15.13	11.50	204
9.59	12.50	2.82	1.39	**16.71**	15.00	**15.32**	14.00	14.38	.....	27
8.29	12.44	3.45	1.21	**17.10**	15.00	**15.89**	14.00	14.67	10.50	79
7.93	7.64	7.72	1.95	**17.31**	16.00	**15.36**	14.00	14.04	.....	51
12.88	10.85	3.90	1.05	**15.80**	15.00	**14.75**	14.00	13.74	15.50	181
8.44	10.78	3.98	1.05	**15.81**	15.00	**14.76**	14.00	13.76	13.00	115
8.40	11.29	3.26	2.17	**16.72**	.....	**14.55**	14.00	14.07	12.00	162
4.64	10.83	4.81	.94	**16.58**	.....	**15.64**	13.00	14.24	.....	499
8.40	9.87	5.37	1.37	**16.61**	16.00	**15.24**	14.00	14.04	20.00	381
11.08	11.06	3.87	.77	**15.70**	.....	**14.93**	14.00	13.77	10.50	81
10.11	12.68	2.77	2.33	**17.78**	.....	**15.45**	14.00	14.85	15.00	35

*Constituent falls below guarantee.

MISCELLANEOUS

Sample number.	Manufacturer and Brand.	From Whom Sample was Taken.
	M. L. SHOEMAKER & CO., PHILADELPHIA.	
171	H. G. Sulphate of Potash, ...	Chester County Association of Farmers,
174	Muriate of Potash, ...	Chester County Association of Farmers,

For explanation of these tables, see p. 21.

FERTILIZERS.

Moisture in 100 pounds.	Phosphoric Acid in 100 Pounds.							Potash in 100 Pounds (Water Soluble).				Nitrogen in 100 Pounds.		Computed commercial value at 2,000 pounds at Dep't rating (see p. 20).	Selling price of 2,000 pounds at the point of selection.	Sample number.
	Soluble in water.	Reverted.	Insoluble.	Total.		Available.		Present as muriate.	Present as sulphate.	Total.		Found.	Guaranteed.			
				Found.	Guaranteed.	Found.	Guaranteed.			Found.	Guaranteed.					
3.09	.....	.....	.....	.....	.....	.....	.....	.....	49.75	**49.75**	....	.....	.....	61.70	44.00	171
.60	.....	.....	.....	.....	.....	.....	.....	50.42	.....	**50.42**	....	.....	.....	56.43	39.00	174

*Constituent falls below guarantee.

INSTRUCTIONS TO AGENTS ENGAGED IN COLLECTING SAMPLES OF FERTILIZERS FOR THE DEPARTMENT OF AGRICULTURE OF PENNSYLVANIA.

Fertilizer manufacturers sometimes allege that there have been errors made on the part of our sampling agents in selecting samples for analysis. It is due these manufacturers, as well as this Department, that the greatest care shall be exercised on the part of all connected with this work, to insure that the samples are fairly taken, are properly sealed and labeled, and are sent to the chemist in exactly the condition in which the goods were found. In order, therefore, that there may be uniformity of practice on the part of our agents, the following instructions have been prepared for their guidance, and strict adherence to these directions is required.

1st.—No sample shall be taken from the manufacturer's warehouse.

2nd.—No agent shall draw more than two samples of any one brand of fertilizer, unless for some special reason, which he shall state in his report.

3d.—Two samples of each brand shall be taken, if possible, selecting them from different localities.

4th.—Each agent shall make report from time to time in duplicate, giving the number of each sample taken, in consecutive order; the name and the address of the manufacturer, the name and address of the agent selling the goods from which the sample is taken; an EXACT copy of the name of the brand of fertilizer; and the selling price per ton of 2,000 lbs. at point of selection. He shall then subscribe his name to each report and send one copy to the official chemist, and the other to the Secretary of Agriculture, at Harrisburg, Pa.

5th.—Agents shall occasionally weigh a bag of fertilizer, to verify the markings as to weight.

6th.—Agents shall keep full memoranda of all the samples; stating the number of packages from which the sample is taken, together with such additional notes of information as may be of service for future reference, in case the accuracy of their work is called in question.

7th.—The sample for analysis must be taken from at least four sacks. The sampling tube to be run its full length from the top toward the bottom down the centre of the sack, then turned two or three times to fill it, and the contents emptied upon a sheet of clean tough paper. The samples from the four sacks to be then thoroughly mixed together, rolling the fertilizer back and forth across the paper by lifting the sides alternately. After thoroughly mixing take a spatula and run it close along the paper under the mixture, lifting it straight up so as to get a perfect cross section of the heap.

8th.—The sample taken as in paragraph 7, is to be AT ONCE packed into the glass bottle provided for the purpose; the lid immediately screwed down tight, and upon the label attached, give the name of the sampling agent and the number of the sample, as marked upon the agent's list. The bottle containing the fertilizer to be at once inserted into the paper case provided, first putting the number corresponding to that on the bottle on the outside of the case. Then moisten the gum flap and seal securely.

9th.—In shipping to the chemist, great care is to be taken to so pack the bottles as to avoid breaking, and the shipping directions should be securely attached to the package, with the name also of the sampling agent marked on the box.

10th.—Agents will keep the Secretary of Agriculture informed in advance of the points to be visited, so as to be promptly reached by telegraph or mail, if necessary.

SPECIAL NOTICE.

The attention of manufacturers and agents is hereby called to the fact that all licenses for the manufacture and sale of Commercial Fertilizers expired December 31st, 1898, and in order to protect agents and others selling, or offering these goods for sale, all licenses should be promptly renewed. It is the duty of agents to know that the fertilizers which they sell or offer for sale are properly licensed, for they, with the manufacturers, are personally liable for offering or selling unlicensed goods; one half of the penalty goes to the informer.